PROPOSING AND EVALUATING A MODEL OF MULTICULTURAL PEDIATRIC NEUROPSYCHOLOGICAL ASSESSMENT

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Dedication

I would like to dedicate this dissertation to all the children and families who need culturally nuanced assessment services to provide them with accurate diagnoses and meaningful treatment plans. I hope that you receive the services and interventions that will help you to have happy and fulfilling lives.

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Abstract

This study proposes and evaluates a model of multicultural factors that can be considered within pediatric neuropsychological assessment (NPA) of children with neurodevelopmental disabilities (NDDs). Multiple cultural factors that emerge during the assessment process relate to accuracy of diagnosis and appropriateness of treatment plans. Assessment is complicated when children are members of a linguistic or cultural minority, immigrants, or have encountered severe hardships (e.g., homelessness, domestic violence, or other trauma). Organizations that have limited resources to appropriately assess children from minority language and cultural groups. NPA instruments may be culturally biased or lack ecological validity, and normative samples may not comprise representative minority samples. This qualitative study examines the utility of a multicultural pediatric NPA (MPNPA) model. The MPNPA model was developed through a synthesis of the existing literature on multicultural NPA combined with a pilot study utilizing interviews with NPA professionals that explored factors relevant to MPNPA. The current research interviews NPA professionals about the utility of the MPNPA model. A qualitative approach is utilized to explore the complex interaction of multicultural factors, the utility of the model, and possible applications of the model. Positive responses about the MPNPA model included its usefulness as a thinking tool to facilitate viewing a child in a larger context; to prompt more in-depth thinking about cultural considerations; to facilitate a more nuanced examination of the cultural interactions between the child, family, assessment instruments, and clinician or assessment team; and to facilitate more accurate differential diagnoses and treatment recommendations. Criticisms of the model focused on its lack of user-friendliness, need to teach the model (especially to less experienced clinicians), and need for more illustration with case examples. Due to small sample size and a group of participants with diverse training, levels of

experience, and practice settings, I decided to leave the MPNPA model unchanged for now, pending further exploration of the model's strengths, weaknesses, and utility with a larger sample. This study may provide a basis for multicultural NPA training and inform development of guidelines for MPNPA that in turn could lead to more accurate diagnoses and more appropriate treatment plans.

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CHAPTER I

Introduction

Accurate neuropsychological assessment (NPA) of pediatric neurodevelopmental disabilities (NDDs) can be challenging, even without complicating factors such as severe physical disabilities or medical problems, language delays, and emotional or behavioral problems. Assessment may be further complicated if children are members of a linguistic or cultural minority, immigrants, or have encountered severe hardships (e.g., homelessness, domestic violence, or other trauma; e.g., American Academy of Clinical Neuropsychology, 2007; Marlowe, 2000; Rhodes, Kayser, & Hess, 2000). Systems and organizations (e.g., public and nonpublic schools, regional centers, social services, and medical research centers) may lack adequate resources to appropriately assess children from minority language and cultural groups (e.g., Mindt, Byrd, Saez, & Manly, 2010). Finally, different disciplines (e.g., clinical neuropsychology, psychiatry, school psychology, developmental pediatrics) have different practices, standards, and ethical guidelines for working with members of non-majority cultures, which further lead to variability in the accuracy, consistency, and comparability of assessment outcomes (e.g., Brickman, Cabo, & Manly, 2006; Mindt et al., 2010).

Pediatric NPA experts have advocated for culturally competent NPA, stating that such competence assessment is essential to arrive at accurate diagnoses, which are necessary to recommend appropriate interventions in treatment plans (e.g., Brickman et al., 2006; Marlowe, 2000; Mindt et al., 2010; Weinstein, Fucetola, & Mollica, 2001). Treatment plans that build on a child's individual strengths and utilize available resources and strategies that are acceptable within the family's culture may be more likely to improve the child's functioning and quality of life (Brickman et al., 2006; Marlowe, 2000; Mindt et al., 2010).

This study investigated a multicultural model of pediatric NPA (MPNPA) of children with neurodevelopmental disabilities (e.g., autistic spectrum disorders and intellectual disabilities). The critical research question driving this study was: *In what ways is application of the MPNPA model helpful or not helpful for NPA of pediatric NDD cases?* Further questions explored whether the content of the MPNPA is representative of all of the domains of consideration when assessing MPNPA for NDD, whether content is missing (and if so, what), and whether any of the domains take greater or lesser priority as related to culture. The study also explored in what ways, if any, the model could be applied to MPNPA for NDD practice, and benefits and drawbacks of the model for conceptualizing cases and for practice.

CHAPTER II

Background and Literature Review

Background

Culture influences children's neuropsychological (NP) development in complex ways (e.g., Arentoft, Scheiner, & Westerveld, 2008). Among other factors, NPA of children is influenced by culture, ethnicity, language, and poverty (Marlowe, 2000; Rhodes et al., 2000). The existing literature addresses many issues related to multicultural assessment, including racial, ethnic, and socioeconomic disparities in identification of children with developmental disabilities (e.g., Bhasin & Schendel, 2007; Mandell et al., 2009).

There is a growing knowledge base on psychometric issues related to culture, such as the use of interpreters or translators for assessment (Rhodes et al., 2000; Rhodes, Ochoa, & Ortiz, 2005c). Psychometric literature also addresses validity of translated assessment instruments and issues related to bilingual assessment (Artiola i Fortuny, 2008; Rhodes et al., 2000). Several authors have described approaches to detecting bias and measuring cultural and linguistic loading in assessment tools (e.g., Flanagan, Ortiz, & Alfonso, 2007; Reynolds, 2000). For example, Kranzler, Flores, and Coady (2010) described Flanagan, Ortiz, and Alfonso's Culture-Language Interpretive Matrices ([C-LIM], 2007) for cognitive assessment of youth from diverse backgrounds. Reynolds (2000) described statistical methods to evaluate cultural bias in NP tests. Artiola i Fortuny (2008) has offered practical suggestions for assessment of non–English-speaking immigrants including a discussion of bilingualism and use of interpreters.

Experts have challenged current practices and called for professional guidelines to address ethical issues in multicultural assessment (e.g., American Psychological Association [APA], 2003). The American Academy of Clinical Neuropsychology (AACN; 2007) has offered general guidelines for NPA. Some of these guidelines address working with cultural and linguistic minorities. Some authors have suggested ways to contend with the ethical, psychometric, and clinical challenges of multicultural NPA (e.g., Mindt et al., 2010; Weinstein et al., 2001).

Multicultural Factors in Neuropsychological Development or NPA Performance

Culture and ethnicity influence children's NP development in complex ways. In a literature review, Arentoft and colleagues (2008) found that adult studies demonstrate consistent performance gaps between ethnic minorities and Whites on NPA (e.g., Conant et al., 2003). However, there is not a direct parallel with performance differences in child studies. For example, Arentoft and colleagues (2008) cited studies that failed to find vocabulary differences between low-income African American and White preschoolers (Qi, Kaiser, Milan, & Hancock, 2006). Other studies found that minority children outperformed White children on measures of executive attention (Mezzacappa, 2004). Still other studies reported that White children outperformed ethnic minority children on measures of processing speed, executive function, and language ability (Llorente, Turich, & Lawrence, 2004; Mezzacappa, 2004; Restrepo et al., 2006).

The literature also addresses cultural and linguistic differences in both NP development and performance on NP tests. For example, Conant and colleagues (2003) found performance differences between Laotian and American children on memory tests. They suggested that differences on memory tasks might be related to developmental differences in written language development. Ostrosky-Solis, Ramirez, Lozano, Picasso, and Velez (2004) compared NPA performance between illiterate indigenous (Maya and Yucatan) participants and non-indigenous monolingual, literate, Mexican controls. They found that indigenous participants had higher scores on visuospatial tasks. They also found that working memory and verbal memory scores were significantly related to level of education.

Wendy Marlowe (2000) discussed how factors such as social class, educational opportunity, parent education, home cultural orientation, English proficiency, acculturation, parenting practices, and motivation affect NP test performance. She also discussed how neuropsychologists' linguistic, social class, cultural, and educational experiences influence constructs of knowledge and selection and interpretation of particular tests. Marlowe further discussed issues relevant to developmental neuropsychology, such as malnutrition, exposure to toxins, inadequate medical care, and other conditions associated with poverty. She also highlighted the disproportionate representation of ethnic minority students in special education. Some researchers have focused on psychometric issues such as cultural bias, cultural loading, cross-cultural validity, and ecological validity (e.g., Kranzler et al., 2010; Reynolds, 2000; Rosselli & Ardila, 2003). Others have focused on general issues of multicultural competence (e.g., Hays, 1996). Marlowe (2000), on the other hand, has integrated client cultural and developmental factors influencing differential NPA performance with clinician factors. Clinician factors include neuropsychologists' worldviews, test selection, and interpretation of test results. Marlowe (2000) pointed out that the interaction of multiple factors often introduces complexity and uncertainty regarding ecological validity of NPA results.

Neuropsychological development and NPA performance varies based on age, sex, culture, primary language, education, and socioeconomic status (SES; Ardila, 1995; Gasquoine, 1999; Hudson, 1960; Manly, Byrd, Touradji, & Stern, 2004; Ostrosky-Solis et al., 1985; Ostrosky-Solis et al., 2004; Osuji, 1982). Alfredo Ardila (1995) provided an overview of multicultural factors in clinical neuropsychology. Ardila posited that abilities measured by NP tests represent culturally learned abilities. Ardila also stated that NPA performance is moderated by culture, primary language, educational level, and ecological demands. Ardila concluded that multicultural use of standard procedures, norms, and tests can lead to conceptual errors.

Gasquoine (1999) reviewed research on NPA of Hispanic Americans. Cultural and ethnic differences in NPA performance have led to speculation about ethnic or cultural superiority and have encouraged race norming. However, Gasquoine (1999) found that factors influencing NPA of Hispanic Americans included English fluency, length of time in the United States, years of education, and poverty. Gasquoine concluded that because ethnicity and culture are both complex multidimensional constructs that are difficult to operationalize, there are no clear criteria for separating ethnicity and culture.

In a study with 503 normally aging older African American adults from New York, Manly and colleagues (2004) found that reading level was a greater predictor of cognitive test performance than age, sex, and years of education. Manly and colleagues (2004) pointed out that reading level is often used as a proxy for quality of education. Ostrosky-Solis and colleagues (2004) compared performance on an NPA battery between illiterate indigenous (Maya and Yucatan) participants and monolingual, literate, non-indigenous Mexican teen and adult controls. They found that indigenous participants had higher scores on visuospatial tasks. They also found that working memory and verbal memory scores were significantly related to level of education. Ostrosky-Solis and colleagues (2004) postulated that NPA results are affected by culture and education.

In cross-cultural tests with children from Laos, Zaire, and the United States, Conant and colleagues (1999; 2003) suggested that differential performance on memory tasks may be modality specific (e.g., verbal or visual memory). They also suggested memory may be related to the influence of reading training on written language development. At the time of the research, written language development was not emphasized in Zaire but was emphasized in Laos and the United States. The researchers also considered the effects of poor sanitation, poverty, nutritional deficiencies, health care problems, and limited community resources. Conant and colleagues (2003) concluded that cultural, social, and educational factors had an influence on NPA performance independent of the influence of nutritional and health care factors. Overall, research suggests that NPA performance differences may reflect culture, SES, and linguistic and educational factors more than truly divergent NP abilities.

Racial, Ethnic, and Socioeconomic Disparities in Diagnosis of Developmental Disabilities

Significant culture-based disparities have been found in identification of children with autistic spectrum disorders (ASDs; e.g., Bhasin & Schendel, 2007; Mandell et al., 2009). For example, Bhasin and Schendel (2007) found that among children identified with ASDs, race, ethnicity, and SES were associated with whether a child was diagnosed as having an intellectual disability in addition to an ASD.

Mandell and colleagues (2009) described issues that could contribute to misdiagnosis or delayed diagnosis of ASD. These issues include inadequate screening processes, lack of awareness of early symptoms, or lack of response to parents' concerns. Behavioral issues may further confound the diagnostic picture. For instance, behavioral acting out or repetitive or self-stimulatory behavior—common with ASDs—may lead to misdiagnosis of an ASD as attention deficit hyperactivity disorder (ADHD), oppositional defiant disorder, or obsessive-compulsive disorder. Any of these issues could delay diagnosis, especially among underserved ethnic minority populations (Mandell et al., 2009).

Nearly 50-60% of children diagnosed with an ASD are also diagnosed with an intellectual disability. A more severe symptom presentation may lead to a primary diagnosis of intellectual disability, rather than of ASD (Mandell et al., 2009). Depending on a clinician's experience and training, a clinician may miss or misdiagnose symptoms associated with ASD (Bhasin & Schendel, 2007). In a multi-site study of 2,568 eight-year-old children who met ASD criteria in the United States, Mandell and colleagues (2009) found significant disparities in accuracy and identification of ASD based on ethnicity. Diagnostic accuracy was evaluated by clinicians who reviewed clinical and educational records to determine whether the ASD definition was met. In that study, ethnic minority children were diagnosed at older ages than White peers or not diagnosed at all. Mandell and colleagues (2009) concluded that ethnic minority status may be associated with accuracy and timing of ASD diagnosis.

Other studies also support that problems with diagnosis are associated with race, ethnicity, and SES. For example, in a study of 617 children aged 3 to 10 diagnosed with ASD and 617 non-ASD controls from Atlanta, Bhasin and Schendel (2007) found that ethnic minority and low SES children were more often also diagnosed with intellectual disability. However, non-minority and higher SES children were not diagnosed with an intellectual disability. Other studies have highlighted disparities between levels of referral and severity of diagnosis (e.g., of intellectual disability and autism) based on culture and SES (Mandell et al., 2009; Slone, Durrheim, Kaminer, & Lachman, 1999; Slone, Durrheim, Lachman, & Kaminer, 1997).

Given the well-recognized ethnic and socioeconomic barriers to economic and educational opportunity and access to health care (APA, 2003), the social justice implications of these diagnostic patterns warrant further investigation (e.g., Anglin & Kwate, 2009; Manly, Jacobs, Touradji, Small, & Stern, 2002; Rohit et al., 2007). For example, intelligence and psychological testing have been used to justify the eugenics movement and differential treatment of people of color. This differential treatment has included slavery, limited educational and employment opportunities, and other forms of oppression and discrimination (Anglin & Kwate, 2009; Manly, 2007).

Psychometric Issues in Multicultural Neuropsychological Assessment

There have been mixed findings regarding the validity of using NP tests cross-culturally. Levav, Mirsky, French, and Bartko (1998) studied 1,875 participants, ages 8 to 90 years, from 5 countries (Canada, United States, Ecuador, Israel, and Ireland). They found commonalities across cultures in NP functioning. That finding suggested that the validity of NP tests is similar across cultures. Some NP tests, such as Luria's battery for NPA, have been adapted for use with specific cultures (Ostrosky-Solis et al., 1985). However, Nell, Myers, Colvin, and Rees (1993) have cautioned that use of tests standardized in the United States or Europe may be misleading when applied to non-Eurocentric cultures. Nell (2000), for example, explicated some of the differences between Eurocentric or Western cultures and non-Western cultures. The gist of Nell's argument is that psychological tests conceived and standardized within the matrix of Western culture presume that the Western worldview of the test developers is shared by all test-takers. This Western worldview, for instance, emphasizes individualism and striving for individual excellence rather than collectivism. Nell (2000) also referred to the values and experiences that accompany exposure to Western education. In particular, test-wiseness, or test-taking skills are taken for granted in Western cultures. These skills include motivation to perform well and knowing how to find a balance between striving for speed and accuracy on tests. Test-wiseness is generally acquired as a function of Western education. In addition to familiarity with testing, construct equivalence is not always clear among Western and non-

Western cultures. *Construct equivalence* is the extent to which a construct being measured (e.g., attention) has the same meaning and value across different cultures. For example, tasks in many standard NPA batteries such as clock drawing, progressive matrices, or Trails B have very different meanings when taken by a literate individual educated in the United States as opposed to an individual raised without formal schooling, exposure to analog clocks, or emphasis on written language. When comparing cross-cultural equivalence of psychological tests, literacy or educational level is often used as an indicator of applicability of a Western test instrument to a non-Western culture (Nell, 2000).

Weinstein and colleagues (2001) have advocated the use of culture-fair NP tests in a culturally sensitive testing environment. A *culture-fair* instrument is one that is sensitive to performance differences due to acculturation rather than NP deficiencies. However, cultural adaptation of NP testing is in the early stages. Weinstein and colleagues (2001) described factors influencing NPA of refugees and victims of mass trauma from non-majority cultures. Victims of trauma may present with co-occurring psychiatric disorders (e.g., posttraumatic stress disorder, depression). They may also present with traumatic brain injury and other health issues related to poor sanitation, nutritional factors, and toxic exposure. For children there are additional issues related to interruption of education, family disruptions, loss, and trauma. Weinstein and colleagues (2001) provided examples of ways in which NPA batteries have been adapted for specific cultural groups (e.g., Vietnamese, Croatian, or Bosnian refugees; Gulf War veterans). The authors suggested a qualitative approach. They also recommend selecting NPA tools that focus on active problem solving with familiar items from the patient's environment. Finally, Weinstein and colleagues (2001) emphasized awareness of the patient's test-wiseness (also see

Nell, 2000) and careful consideration of what cultural factors may influence the patient's NPA performance.

In addition to using culture-based norms, culture-free tests, or qualitative approaches, there have been other approaches to adjusting tests or scoring techniques to account for culture-based discrepancies in test performance. For example, Lautenschlager, Dunn, Bonney, Flicker, and Almeida (2006) used latent semantic analysis (LSA) to adjust cognitive test scores for gender and years of English fluency. LSA is a mathematical procedure that compares the semantic similarity of words. In this study, Lautenschlager and colleagues (2006) used LSA to compare participants' recalled prose and the original text used in a memory test. This adjustment yielded equivalent scores between English- and non-English-speaking participants. Flanagan and colleagues (2007) developed the Culture-Language Interpretive Matrices (C-LIMs). The C-LIMs are a tool to aid assessment of culturally and linguistically diverse children. However, Kranzler and colleagues (2010) concluded that further research is needed to establish the validity and utility of the C-LIMs. Kranzler and colleagues (2010) instead recommended the use of nonverbal tests and performance-based measures. Nonverbal instruments for children include the Universal Nonverbal Intelligence Test (UNIT) and Naglieri Nonverbal Ability Test (NNAT). The Kaufman Assessment Battery for Children (KABC) is an example of a performance-based measure. According to Rosselli and Ardila (2003), however, evidence does not support the claim that nonverbal or performance-based measures are culture-free. With a culture-free test, individuals with similar abilities would perform equally well regardless of their culture or background. One might conclude that adjusting tests and scoring techniques is inadequate to remedy the incongruence of NP testing across cultures and languages.

Use of interpreters or translators, translated instruments, and bilingual issues. Artiola i Fortuny and Mullaney (1997) have offered suggestions to ameliorate some of the problems associated with cross-cultural validity of tests. Some of these problems include issues related to translating and adapting NP tests. Rhodes, Ochoa, and Ortiz (2005a, 2005c) have discussed acculturation factors and the use of interpreters in school-based assessments. Rhodes and colleagues (2005a) maintained that disadvantages in test performance stem from low acculturation rather than from inherent difference in intelligence or brain function. In this example, *acculturation* describes a lack of knowledge of the culture that underlies a test. The authors maintained that in addition to evaluating a child's language abilities, acculturation must also be considered in test selection, administration, and interpretation. Rhodes and colleagues (2005c) provided specific suggestions regarding the use of interpreters or translators in assessment. They discussed interpreter skills and qualifications and ethical aspects of using interpreters for assessment.

Other authors have offered useful approaches to multicultural NPA. Reynolds (2000) described statistical methods to evaluate cultural bias in NP tests. Artiola i Fortuny (2008) offered practical suggestions for assessment of immigrants of non–English language origin, including a discussion of bilingualism and use of interpreters.

Race norming. Some researchers have advocated the use of race norming. *Race-norming* is using ethnicity- or culture-specific normative data to interpret NPA results (e.g., Ardila, 1995; Byrd et al., 2006; Gurland, Wilder, Cross, Teresi, & Barrett, 1992; Manly et al., 1998). Depending on the quality of the normative data, using race-specific normative data could increase the specificity of cognitive measures and the accuracy of diagnosis for a particular patient (Manly, 2007). Lower specificity of cognitive measures has contributed to greater likelihood of African Americans (as opposed to White European Americans) being misdiagnosed as having lower intelligence or brain dysfunction (Manly, 2007). However, race-norming has been controversial for several reasons. For one, ethnicity-specific norms do not address issues of test bias or cultural equivalence. Additionally, ethnicity-specific norms have been used to justify irresponsible biological and genetic conclusions (Brickman et al., 2006; Gasquoine, 1999). Further, there is a great deal of heterogeneity within racial and ethnic categories that are historically and socially defined (Manly, 2007). For example, an instrument that has African American/Black norms may be based predominantly on a sample of Black Americans who have been educated in the United States. These norms may be less specific when applied to Black individuals who are from the Caribbean or Africa or to bi-racial or multiracial individuals (Manly, 2007). Manly highlighted the importance of clarifying the independent effects of race, culture, educational experience, and SES on NP test performance. Manly also stressed the importance of operationalizing behavioral, experiential, and biological factors that are assumed to differ between racial groups. She recommended continuing to challenge definitions of race, ethnicity, culture, functional deficit, and cognitive impairment. Regardless of whether race-specific norms are developed, true validity can only be achieved if the psychometric properties of NP measures are equally robust across cultural boundaries (Manly, 2007).

Ethical Issues in Multicultural Neuropsychological Assessment

Cohen and Swerdlik (2010) have discussed the history of psychological testing within a cultural context. They highlighted many ways psychological tests have been—and continue to be—used unfairly with members of non-majority cultures. Artiola i Fortuny and Mullaney (1998) have questioned whether it is ethical to assess an individual who speaks a language in which the assessor is not fluent. Limited knowledge of the examinee's language may adversely affect the assessor’s ability to interpret the examinee’s responses and assess the examinee’s mood, affect, level of cooperation, and cognitive functioning. Limited assessor language ability may also interfere with the examinee’s ability to understand instructions or questions posed by the assessor. Brickman and colleagues (2006) have explored the complexity of clinical and ethical issues accompanying NPA of patients from diverse cultural and linguistic backgrounds. One of these issues is race-norming. Another issue is determining who is competent to design, translate, and administer NP tests to non-native English speakers. Rhodes, Ochoa, and Ortiz (2005b) have discussed assessment of culturally and linguistically diverse students from a legal and ethical perspective. Rhodes and colleagues (2005b) discussed the meanings of native language, parental consent, and nondiscriminatory assessment procedures.

Anglin and Kwate (2009) addressed some of the social justice implications of delayed diagnosis or misdiagnosis. The authors reviewed the harmful history of intelligence testing of African Americans. They highlighted a history of characterizing African Americans as intellectually inferior to White European Americans, cultural bias, and eugenics. Anglin and Kwate (2009) discussed the role of NPA in diagnosing brain dysfunction. They also raised concerns about construct validity and cultural equivalence of test items and testing approaches, use of education-corrected norms, and underrepresentation of African Americans in normative samples. Anglin and Kwate (2009) discussed the use of education-corrected norms and differences in quality of education among ethnic groups. The authors discussed the need to further examine the role of ethnicity in NP testing. Quality of education differs among ethnic groups, especially for low SES individuals. Additionally, ethnicity, SES, and age cohort may interact to influence NPA performance. For example, African American adults over age 65 are more likely to be misdiagnosed as impaired as a result of differences between African American and White schools. This is especially true for those educated prior to 1954, when *Brown v. Board of Education* was decided. School differences include quality of school materials, teaching methods, and access to resources (Manly et al., 2002; Rohit et al., 2007). Historically, intelligence and psychological testing have been used to justify the eugenics movement and differential treatment of people of color. This differential treatment has included slavery, limited educational and employment opportunities, and other forms of oppression and discrimination (Manly, 2007).

Misdiagnosis is only one factor that contributes to the ongoing healthcare disparities between ethnic minority and majority individuals in the United States (Snowden, 2012). Disparities in access to and quality of mental health care treatment perpetuate the discrimination and inequity experienced by minority individuals in the United States. Accurate and timely diagnosis and access to high-quality, culturally acceptable interventions for autism and other NDDs are first steps to remediating these social injustices.

Guidelines and Models for Multicultural Assessment

Portions of the American Psychological Association Multicultural Guidelines (APA, 2003) may help clinicians make ethical decisions about culturally appropriate assessment practices. The APA Guidelines advise psychologists to be aware of the validity of various instruments or procedures and to consider issues such as test bias, test fairness, and cultural equivalence. The APA Guidelines also highlight the importance of being knowledgeable about a test's reference group and potential limitations, considering the cultural and linguistic characteristics of the person being assessed, and exercising critical judgment when using and interpreting results from standardized assessment tools and methods (APA, 2003). The American Academy of Clinical Neuropsychology (AACN, 2007) offers general guidelines for

NPA and consultation, some specific to working with individuals from cultural and linguistic minority groups. The AACN Guidelines (2007) call upon NPA professionals to be aware of the risks involved in administering NPA with individuals from underserved or minority populations. The AACN Guidelines also offer caveats regarding appropriate use of normative data, knowledge of validity and cultural bias, use of interpreters, and linguistic fluency. The AACN (2007) guidelines are a good start and are more specific to the tasks and issues involved with NPA than the general APA Guidelines (2003). However, the AACN Guidelines (2007) do not fully address issues of multicultural NPA. Neither the APA (2003) nor the AACN (2007) guidelines address issues specific to multicultural NPA involving a pediatric population or individuals with NDDs.

Mindt and colleagues (2010) discussed current challenges to delivering culturally competent NP services. They authors reviewed ongoing efforts and goals to improve multiculturally competent delivery of services through research, practice guidelines, and training. Mindt and colleagues (2010) stressed the importance of both increasing cultural diversity among neuropsychologists and improving ethnic minority access to services. The authors suggested that while waiting for these challenges to be addressed, neuropsychologists should use the best NP instruments and norms available while acknowledging their limitations when interpreting findings. Mindt and colleagues further suggested that assessors gather as much sociocultural information as possible to contextualize NP findings for patients or research participants. Finally, the authors suggested that whenever feasible, assessors should refer cases to neuropsychologists who have expertise working with particular populations.

Conclusion

There is a significant knowledge base addressing various aspects of multicultural NPA. Culture, ethnicity, language, poverty, and other factors influence children's NP development and NPA performance (Arentoft et al., 2008; Marlowe, 2000; Rhodes et al., 2000). There are well-documented racial, ethnic, and socioeconomic disparities in identification of children with NDDs (e.g., Bhasin & Schendel, 2007; Mandell et al., 2009). Researchers have explored psychometric issues related to culture, including the use of interpreters or translators for assessment, bilingual assessment, and the validity of translated assessment instruments (Artiola i Fortuny, 2008; Rhodes et al., 2000; Rhodes et al., 2005c). Some authors have described approaches to detecting cultural bias in existing NP assessment tools (e.g., Flanagan et al., 2007; Reynolds, 2000).

NPA experts and professional organizations have challenged current practices and suggested guidelines to address clinical and ethical issues in multicultural assessment (e.g., AACN; 2007; APA, 2003; Mindt et al., 2010; Weinstein et al., 2001). However, much work remains to be done to develop guidelines for multiculturally appropriate NPA of children with NDDs, and to validate NPA instruments that are culturally and linguistically appropriate.

CHAPTER III

The MPNPA Model

Pilot Study: Cultural Factors in NPA of Children with Neurodevelopmental Disabilities

The pilot study that formed the basis of the current research, conducted primarily in 2012 (Malamud Ozer, 2013), was qualitative and was guided by principles of grounded theory (Braun & Clark, 2006). A literature review yielded identification of factors relevant to multicultural pediatric NPA in general and to assessment for children who have been diagnosed with an NDD in particular. Those factors established a preliminary framework to guide the development of an open-ended interview protocol. That interview protocol, in turn, helped with interpretation of questionnaire responses from experts regarding the interplay of culturally relevant factors in NPA that were worked into a model for considerations in culturally competent NPA of cultural minority children. Participant responses yielded ideas that were incorporated into the results.

Pilot study: Participants. The questionnaire, resulting from the above-described literature review, was administered to seven NPA professionals representing different settings and professions. Participants included clinical neuropsychologists, pediatric clinical neuropsychologists, bilingual neuropsychologists, and one school psychologist. Two respondents were currently advancing their graduate education. Participants reported performing a variety of assessments: Out of seven respondents, five (71%) perform assessments for autism, ADHD, or learning disabilities; 43% perform traumatic brain injury (TBI) assessments; and 29% perform pre-surgical, epilepsy, or tumor assessments.

Pilot study: Instrumentation. An open-ended protocol first asked participants to think of a pediatric NPA case that involved culture and then asked questions about that case. Participants were then asked similar questions about a “non-culture” case. For the purposes of the pilot study, *culture* was defined as: "Race, ethnicity, language, immigration history, SES, or other child or family characteristics you consider to be cultural" (Malamud Ozer, 2013), based on common cultural factors identified in the literature review. Participants were asked what cultural factors were involved in assessment in general. They were also asked about identification of differences between "cultural" and "non-cultural" cases, availability and selection of instruments, administration of tests, accuracy of diagnosis, treatment planning, implementation of interventions, treatment outcomes, training in multicultural assessment, and organizational policies and practices.

Pilot study: Data analysis. Consistent with a grounded theory qualitative framework, interview notes and email responses were analyzed using a thematic analysis recommended by Braun and Clark (2006). Interview notes and email responses were coded for common themes by the primary researcher.

Pilot study results. Several factors emerged during the analysis of participant responses. Factors were defined as "a characteristic or attribute of the child, family, examiner, assessment instruments, or environment that may influence the assessment process." Factors included selection of tools, assessment approach, family willingness and cultural beliefs, resources, beliefs and values, language/linguistic, organizational/professional development, referral/consultation, training. Many factors that emerged were consistent with the extant literature, such as language (primary, preferred, fluency, bilingualism), ethnicity, race, SES, gender, culture, child's age, level and quality of education, and use of interpreters or translators.

To organize the factors into more meaningful chunks, the researchers identified categories that described the individuals, agency, or process influenced by that particular factor related to NPA. Each factor was assigned to the category to which it applied. Categories included child/family factors, clinician/assessment team, NPA instruments, and organizations. Other factors that emerged in the *child/family* category included beliefs and attitudes about testing, stigma and beliefs about disability and mental illness, willingness to express emotion or share personal information outside the family, willingness or ability to follow through on treatment recommendations, lack of trust in the medical establishment, and the race, ethnicity, and language of the majority culture. *NPA instrument* factors included normative samples used by test developers limiting applicability in cultural minority cases, inappropriate use of published norms, concerns about construct validity, and lack of flexibility of measures to account for culture. However, even if a test is not quantitatively valid, it can qualitatively inform treatment. *Clinician and assessment team* factors included clinician culture, ethnicity, beliefs, values, biases, cultural understanding and awareness, and acceptance of cultural differences in development, behavior, and ways child interacts with world.

The *organization* category brought to light organizational policies and practices surrounding use of interpreters, need to adapt or translate tests or test instructions, cultural competence training, working with multidisciplinary teams, and when to use consultation and referral to other qualified professionals. Most respondents had some multicultural training as part of graduate training, internship and supervision, reading professional literature, and continuing education. However, several respondents raised the issue that cultural competence training is often not specific to assessment, and rarely to NPA. One respondent noted that while there is some good training, there is also a lot of bad or offensive multicultural training out there that perpetuates racism and stereotypes in professional settings. For example, cultural competence training that emphasizes patriarchal family structures and collective or group identification in a particular culture may oversimplify perspectives to the point that clinicians neglect to consider individual differences and variations within cultures and families. Cultural factors and categories in NPA of children with NDDs are summarized in Table 1.

Table 1

Cultural Factors in NPA of Children with Neurodevelopmental Disabilities: Summary of Categories by Factor

	Category			
Factor	*Child/ family*	*NPA instruments*	*NPA team*	*Organization*
Selection of assessment tools	✓	✓	✓	✓
Family willingness for NPA; cultural beliefs about disability	✓		✓	
Family education, access to resources	✓		✓	
Language/linguistic, bilingualism	✓	✓	✓	
Use of interpreters or translators			✓	✓
Availability of NPA instruments		✓	✓	✓
Available norms		✓	✓	
Assessment approach	✓	✓	✓	✓
Cultural attitudes and beliefs about assessment (family beliefs, child attitude, assessment team training and beliefs)	✓		✓	
Influence of culture on treatment planning	✓		✓	✓
Accuracy of diagnosis		✓	✓	
Organizational policies and practices			✓	✓
Professional development/Training	✓		✓	✓
Referrals/consultation			✓	✓

Factors often fell into multiple categories: for example, language was a theme for the child, parents, clinician and other members of the assessment team, interpreters (e.g., dialects, idioms, fluency, competency), and the language utilized in the assessment instrument itself. Similarly, education fell into both child and parent categories. SES affected the child and family as well as the clinician and assessment team and the broader community (availability of resources). Language, comprehension, cultural expectations about test taking, and stereotype threat were raised as test administration issues. Factors related to treatment plans and outcomes included family agreement with diagnosis, concordance of family goals with professional goals, and that treatment plans in some cultures can be individual or include only immediate family, while others should more appropriately include extended family (child care providers, decision makers). Other comments of interest included the observation that there is no such thing as a non-cultural case: all cases involve culture in some manner. Respondents also raised the idea that assessment professionals often do not consider the interaction of multiple factors (e.g., race, culture, gender, religion, and SES) and that there are many factors of which we may be unaware.

Pilot study discussion. This pilot study found many factors related to MPNPA that were expected based on the extant literature. Other factors that emerged included beliefs, attitudes, and stigma about testing, disability and mental illness, willingness or ability of the family to follow through on treatment recommendations, lack of trust in the medical establishment, and the cultural identification and experience of the clinician, assessment team, and majority culture. Many factors fell into multiple categories, highlighting the importance of interactions between multiple factors in multiple categories and the realization that there may be unidentified factors.

Ecological Models

Ecological models of human development seemed to be a good fit to describe the complex interactions between factors in multicultural pediatric NPA. Ecological (or socioecological) models have been used by social scientists, psychologists, and those in other fields to explain the complex interplay, systems relationships, and dynamics in many areas. Many ecological models are based on Bronfenbrenner's well-known ecological framework for human development (1979). An ecological model is a useful way to conceptualize child developmental factors at the individual level. The ecological model also represents individual development within a family and environmental context. Ecological models allow researchers and clinicians to describe and examine the interaction of those individual and environmental factors. The ecological model does not preclude the use of other theories or models within which to view human development or functioning (e.g., genetic, biopsychosocial, behavioral, family dynamics). Rather it provides a framework within which to conceptualize the interrelationships of systems and functioning on different levels within the model. The following sections describe Bronfenbrenner's early and updated ecological theories (Bronfenbrenner, 1979, 1999), illustrate a pediatric NP assessment case using Bronfenbrenner's Process-Person-Context-Time model (PPCT) model, then introduce the proposed MPNPA model.

The ecological model views systems from a perspective that emphasizes multiple dimensions (e.g., individual genetics and biology, cultural and social environment) and levels (e.g., individual, family, community). The ecological system also emphasizes the complexity of human functioning, development, and relationships within a larger context. Bronfenbrenner's original (1979) ecological model postulated a system of five socially organized, interrelated subsystems that support and guide human development: microsystem, mesosystem, exosystem, macrosystem, and chronosystem. Influences among the subsystems are bi-directional, suggesting that development in one system relates to development in other systems: The individual can affect the environment within which he or she develops, and the environment can affect the development of the individual.

Bronfenbrenner continued to develop and revise his theory of human development until his death in 2005 (Tudge, Mokrova, Hatfield, & Karnik, 2009). Bronfenbrenner criticized his earlier theory for its primary focus on *context* (e.g., microsystem, mesosystem, exosystem, and macrosystem), while discounting the role an individual plays in his or her own development (e.g., Bronfenbrenner, 1999; Tudge et al., 2009). Bronfenbrenner's evolved theory, the PPCT model, placed more emphasis on the individual's role in his or her development and was more readily empirically tested (Tudge et al., 2009). It continued to be an ecological model and to stress person-context interrelatedness. However, the PPCT model differed through its emphasis on *processes* of human development.

Bronfenbrenner's Process–Person–Context–Time (PPCT) Model

The bioecological PPCT model makes a critical distinction between environment and process, in which process occupies a central role and is defined in terms of its relationship both to the environment and to the developing individual (Bronfenbrenner, 1999). The properties of the PPCT model are based on two interdependent propositions: Proposition 1 posits that human development over the life course takes place through processes of progressively more complex reciprocal interactions between an active, evolving human organism and the people, objects, and symbols in the organism's immediate external environment. These enduring forms of interaction—taking place on a regular basis or over extended periods of time—are referred to as *proximal processes* (Bronfenbrenner, 1999). Child-parent interactions, child-child activities, play (group or individual), learning new skills, and performing complex tasks are examples of proximal processes (Bronfenbrenner, 1999). Proposition 2 posits that aspects of the proximal processes that affect development, including their "form, content, power, and direction" (Bronfenbrenner, 1999, p. 5), vary systematically as a function of the developing person's individual characteristics, aspects of the environment (immediate and remote), and the nature of developmental outcomes under consideration. Proximal processes also vary as a function of the social changes and lack of change that occurs—historically and individually—over the course of the person's lifetime.

Process. Bronfenbrenner described processes as that which could explain the connection between some aspect of the context (e.g., culture or social class) or the individual (e.g., gender) and an outcome of interest. Proximal processes are fundamental to the PPCT theory; it is by engaging in activities and interactions with the environment that the developing individual begins to make sense of the world and his or her place in that world. The nature of these proximal processes varies based on characteristics of the individual and the context (spatial and temporal; Bronfenbrenner, 1999).

Person. The PPCT model incorporates the role of the individual in the person dimension. Bronfenbrenner (1999) considered relevant genetic, biological, and especially personal characteristics individuals bring with them into social situations. Personal characteristics are divided into three types: demand, resource, and force characteristics. *Demand characteristics*—such as age, gender, race, or physical appearance—act as an immediate stimulus to other people. Demand characteristics may influence initial interactions with others because of expectations (Tudge et al., 2009). Demand characteristics may affect development because of their capacity to invite or discourage reactions from the social environment, which may, in turn, foster or hamper development (Bronfenbrenner & Morris, 2009). *Resource characteristics* are biopsychological assets or liabilities that influence an organism's ability to effectively engage in proximal processes (Bronfenbrenner & Morris, 2009). Developmental liabilities in this category may include genetic defects, low birth weight, chronic or severe illness, and acquired or traumatic brain injury. Developmental assets could include ability, skills, knowledge, and experiences that, over the course of a lifetime, extend the areas in which proximal processes can act on the organism (Bronfenbrenner & Morris, 2009). Resource characteristics may include mental and emotional characteristics (e.g., past experiences, skills, intelligence) as well as social and material resources (e.g., educational opportunities, caring parents, food and housing; Tudge et al., 2009). *Force characteristics* are behavioral dispositions that can activate and sustain or retard the occurrence of proximal processes (Bronfenbrenner & Morris, 2009). Force characteristics may be developmentally generative or disruptive. Developmentally disruptive dispositions, for example, could include impulsiveness, explosiveness, distractibility, inability to defer gratification, difficulty with emotional regulation, and aggressive tendencies. Apathy, inattentiveness, shyness, insecurity, and avoidance tendencies are also disruptive dispositions. Developmentally generative dispositions, on the other hand, include active orientations such as curiosity, tendencies to engage in activities or with other people, responsiveness to others, and ability to delay gratification (Bronfenbrenner & Morris, 2009). Two children may have similar resource characteristics but may have different developmental trajectories if one child has developmentally generative force characteristics (e.g., motivation to succeed, ability to persist in tasks) and the other has developmentally disruptive characteristics, such as impulsiveness or avoidance tendencies (Tudge et al., 2009).

Different combinations of person characteristics may influence the roles individuals have in changing their contexts. For example, an individual may have a passive role in changing his or her context due to demand characteristics such as skin color, age, or gender. Conversely, an individual may take a more active role in changing his or her context due to resource characteristics such as physical, mental, or emotional assets, combined with generative force characteristics, such as motivation to succeed (Tudge et al., 2009). So, an individual's role may be passive or active in changing his or her context due to different person characteristics. Person characteristics of different types (force, demand, and resource) can interact with other person characteristics to change an individual's context.

Context. The context (or environment) comprises four interrelated systems based on Bronfenbrenner's earlier (1979) ecological framework for human development: microsystem, mesosystem, exosystem, and macrosystem. The *microsystem* is any environment in which the developing individual spends considerable time engaging in activities and interactions, such as home, school, or peers (Tudge et al., 2009). The *mesosystem* describes the interactions among microsystems. For example, the connection between the child's parents and teacher represents a mesosystem, as does the connection between the family and the neighborhood (Bronfenbrenner, 1994). The *exosystem* involves relationships between systems, including at least one system that indirectly affects the child's functioning. For example, the relationship between the home environment and a parent's work may indirectly affect a child's development through the parent's availability to spend time caring for the child, income, or childcare situations. Exosystems are likely to affect child development through indirect influences on the family, school, and the child's peers. The three exosystems that are most likely to affect child functioning and development are the parent's workplace, family social networks, and neighborhood-community contexts (Bronfenbrenner, 1994). The *macrosystem* is the overarching pattern of subsystems (micro-, meso-, and exosystems) that characterize the culture or subculture within which the child and family exist and function. The macrosystem may include belief systems, lifestyles, customs, tangible resources, opportunities, laws, and risks or hazards embedded in the subsystems (Bronfenbrenner, 1994). Macrosystems can be used to describe specific ethnic groups, religious affiliations, and social classes, as well as overarching cultural or social contexts. The larger principles defined by the macrosystem cascade down through the other layers to influence interactions among all the other subsystems (Bronfenbrenner, 2005).

Time. In the PPCT model, time is divided into subfactors, in which *micro-time* describes what is occurring during the course of a specific activity or interaction and *meso-time* is the extent to which activities and interactions occur with consistency in the developing person's environment (Tudge et al., 2009). *Macro-time* is the PPCT subfactor for what was termed the chronosystem in Bronfenbrenner's earlier (1979) model. The chronosystem encompasses change or stability over time. This does not simply describe the child's age or expected developmental stages, but also is a way to see the child's development and functioning within the context of family development, changes in family structure, socioeconomic influences over time (such as changes in employment or housing influenced by changes in the economy), or changes in family circumstances (for example due to immigration or natural disasters). Changes (or stability) can be internal to the child (e.g., age-expected cognitive development, physiological changes, puberty) or external (a parent's or sibling's death, changing family dynamics). Historical events may influence development differently depending on when in a child's development the event occurs (Tudge et al., 2009). For example one might expect different developmental influences of a terrorist attack or major hurricane on a 2-year-old child versus an 11-year-old.

Thus the PPCT model makes a distinction between processes and the environment. In the PPCT model, proximal processes play a crucial role in describing the complex, reciprocal interactions between an individual (person) and the environment (context) over time. The PPCT model is a useful way to examine the interplay of multiple factors in influencing an individual's life trajectory and functional outcomes, especially in the context of multicultural pediatric NPA.

The PPCT Model in the Context of Multicultural Pediatric NPA

Many aspects of multicultural pediatric NP assessment can be described within the context of Bronfenbrenner's PPCT model, as illustrated in Appendix A: MPNPA Example within the PPCT Model. I created Appendix A as a way to organize and apply the PPCT model to MPNPA for the purpose of this dissertation. However, it can be difficult to fully describe MPNPA within the PPCT model because it is difficult to account for factors related to the clinical NP assessment team, the organization in which the team functions, test/instrument factors, and language factors across multiple domains. The MPNPA model is proposed as a means to describe the complex process of multicultural pediatric NPA using the PPCT model. The hope is that application of the MPNPA model may contribute to multiculturally appropriate pediatric NP assessments with results that address issues of ecological validity and interpretations and treatment recommendations that consider the child and family within the context of real-life circumstances and over time.

The Proposed Model: MPNPA

The MPNPA model is based on the general principles of Bronfenbrenner's PPCT bioecological theory of human development (Bronfenbrenner, 1999). To more completely conceptualize the complexity of a child's current functioning in the context of NPA, the PPCT framework encompasses four domains involved in MPNPA, including the child/family, clinical assessment team, organization within which the NPA takes place, and NPA instruments/tests.

Most of the factors identified in the pilot study research can be categorized in one or more of these four domains (see Table 1). Some factors, such as language, occur across multiple domains. For example, the child's primary language, bilingualism, fluency, and literacy may be child/family factors. The family's language abilities affect the family's ability to complete rating scales and developmental histories and communicate with the assessment team. Hence, the child's and family's language may affect the clinician's choice of assessment instruments and need for interpreters, translators, or adaptations of assessment instruments. If an interpreter is utilized, additional factors come into play such as interpreter training, possible influences of dialect, fluency, social class, gender, and/or ethnicity between the interpreter, the family, and the child. Interpreter availability (languages, dialects) and training may be influenced by organizational factors. The language abilities of the clinician or assessment team may influence test selection, administration, and interpretation, as well as interactions with the child, family, and interpreters. The interaction of language factors across multiple domains may affect the child's performance and the clinician's view of the child's abilities. One may similarly conceptualize culture as an overarching factor wherein the child's and family's culture interacts with those of the clinician and assessment team, culture of the norming sample used in assessment instruments, and organizational culture.

Each domain of the MPNPA model can be further conceptualized within the PPCT framework (available from author upon request). I hoped that drawing attention to the intersections of domains during interviews would elicit comments not only about use of the

PPCT model as applied to MPNPA, but also about NPA factors that span multiple MPNPA domains and the interactions among NPA factors.

CHAPTER IV

Methodological Approach

The current qualitative research is guided by principles of content analysis (e.g., Elo & Kyngäs, 2008). A synthesis of existing literature and preliminary interviews about multicultural NPA yielded a set of factors relevant to MPNPA in general, and assessment of NDDs in particular. The factors tended to fall into one or more categories (child/family, NPA instruments, clinician/NPA team, and organization). The factors and categories identified could be partially described within the context of Bronfenbrenner's PPCT model, adaptation of which led to development of the MPNPA model.

The MPNPA model established a preliminary framework to guide the development of a semi-structured interview protocol. That protocol, in turn, guided 90-minute individual interviews with NP assessment professionals to gather input about the utility of the MPNPA model for case conceptualization and treatment planning in multicultural pediatric NPA cases.

Selection Criteria

I sought approximately 12 to 15 pediatric NPA professionals to interview (minimum 10, maximum 18). Interviewees needed to be over age 18. Interviewees could include assessment professionals such as clinical neuropsychologists, school psychologists, pediatric neurologists, bilingual neuropsychologists, or psychiatrists who perform NPA. Professionals could work in a variety of settings including school districts, Regional Centers, diagnostic centers, children's hospitals, or private practice. Participants could include individuals who are not currently practicing but who have experience performing neuropsychological assessments with children in the target population in the past 10 years. I excluded NPA professionals who work only with adults, or who work with children but have no experience assessing children with neurodevelopmental disabilities, as well as any individuals who had not performed neuropsychological assessments with children in the target population within the past 10 years.

Sampling Technique

I offered NPA professionals a $300 incentive for each interview. Sample size was determined based on a combination of practical considerations and theoretical saturation. Theoretical saturation is determined when no new themes, categories, or relationships are emerging from the data and new data yield no significant new insights (Mason, 2010). Estimated sample size was based on a review of typical sample sizes in qualitative research (Mason, 2010). Practical considerations that influenced sample size included funding and finding participants willing to invest the time to participate in interviews.

I used snowball sampling techniques to locate interviewees. This included obtaining names of NPA professionals through professional acquaintances and faculty recommendations, which yielded further interviewees. I knew three NPA professionals who expressed interest in participating. I had contacts in several San Francisco Bay Area school districts and knew people who introduced me to NPA professionals at Regional Center of the East Bay and Oakland Children's Hospital. I initiated contact with NPA professionals at several San Francisco Bay Area organizations including hospitals, Diagnostic Center of Northern California, and several private practices. Additionally, I made contact with several pediatric NPA professionals through my professional neuropsychology listservs. Snowball sampling techniques yielded a pool of 68 potential participants. I initiated contact through an email recruitment flyer, which I emailed to 45 potential participants. I could not reach five potential participants through email, so I left voicemail messages for them. My initial contacts with 50 potential participants yielded a sample of 17 assessment professionals who agreed to participate in my research study.

Because this is a population of specialized providers (pediatric NPA professional), it could have been difficult to locate the required number of participants utilizing means other than snowball sampling. Limitations of snowball sampling are that the sample is not random and may not accurately represent the target population (pediatric NPA professionals who assess NDDs). I arranged interviews by contacting NPA professionals, supervisors, and department directors at pediatric NPA settings such as school districts, Regional Centers, diagnostic centers, medical centers, children's hospitals, or private practices.

Participants

Seventeen assessment professionals participated in the study. All participants were female, with assessment experience ranging from 2 to 25 years (median = 10 years). Eight participants (47%) self-identified as multicultural or ethnic minority, seven (41%) identified as majority culture, and two (12%) did not specify. Eleven participants (65%) were bilingual or multilingual. In addition to English, multilingual participants spoke Spanish, Hebrew, Catalan, Guarani, Tagalog, Chinese (Mandarin, Cantonese, Taishanese), Telugu, French, and American Sign Language (ASL). Practice settings of participants included school districts, private practice, hospitals, Regional Center (serves individuals with developmental disabilities), Diagnostic Center of Northern California (serves diagnostically complex cases), and outpatient clinics. Additional participant professional activities included training, supervision, and teaching or graduate level faculty. Some participants were involved in multiple settings and activities.

Five participants were Master's level practitioners, one (6%) was an Educational Specialist (Ed.S.), and eleven participants (65%) were doctoral level practitioners (Psy.D. or Ph.D.). Specialization areas included three (18%) clinical psychologists, seven (41%) school psychologists, three (18%) clinical neuropsychologists, and four (24%) pediatric neuropsychologists. Participant demographics are summarized in Table 2.

Table 2

Participant Demographics (n = 17)

Demographic	Participant responses	Number
Gender	Female	17 (100%)
Age[a]	27-59 years (median = 37 years)	
NP assessment experience	2-25 years (median = 10 years)	
Cultural identity	White/Caucasian/European American	7 (41%)
	Sephardic/Ashkenazi/Jewish	3 (18%)
	Chinese American	2 (12%)
	Hispanic	1 (6%)
	Filipina immigrant	1 (6%)
	South Asian (Telugu American)	1 (6%)
	Multicultural/Multiethnic	2 (12%)
Multicultural/Minority culture	Yes	8 (47%)
	No	7 (41%)
	Not Specified	2 (12%)
Bilingual/Multilingual	Yes	11 (65%)
	No	6 (35%)
Bilingual languages	Spanish, Hebrew, Tagalog, Catalan, Guarani, Mandarin, Cantonese, Taishanese, Telugu, French, and ASL	

[a]Three respondents did not specify age.

(Table continues)

Demographic	Participant responses	Number
Practice settings/ Activities[b]	School District	7
	Private Practice	6
	Hospital	5
	Regional Center	3
	Diagnostic Center	2
	Training	2
	Supervision	2
	Outpatient Clinic	2
	Teaching/Faculty	1
Education/Degree	Master's	5 (29%)
	Ed.S.	1 (6%)
	Psy.D.	7 (41%)
	Ph.D.	4 (24%)
Specialization	Clinical psychology	3 (18%)
	School psychology	7 (41%)
	Clinical neuropsychology	3 (18%)
	Pediatric neuropsychology	4 (24%)

[b] Some participants have multiple practice settings/roles.

Data Collection

Interviews. Individual interviews took place at locations convenient to participants. All interviews took place within the San Francisco Bay Area. All but one of the interviews took place in person; one interview was done via email and phone call. Before each interview, I obtained informed consent. Informed consent forms informed participants that interview results will be consolidated and individual names withheld from the research report. Participants were informed that I may discuss general context in which participants work (e.g., school, hospital), but that no identifying information will be disclosed. Participants were informed that they may withdraw from the research study at any time. During the interview, I first introduced the MPNPA model with examples (available from author upon request). Then I asked the participant to think of an example of a multicultural pediatric NPA case. The participant and I went through the MPNPA model together while the participant made notes on a blank MPNPA worksheet (available from author upon request). Then we discussed the interview questions (see Appendix B). Some of the interviewees called attention to ideas that were incorporated into the overall analysis of results. I scheduled interviews in advance with NPA professionals. Interviews were audio-recorded and subsequently transcribed by a professional transcription service. A total of 16 hours and 50 minutes were recorded and transcribed.

Development of the interview guide. The interview guide was developed by modifying the PPCT framework to accommodate the four MPNPA domains (child/family, NPA instruments, clinician/NPA team, and organization). The interview guide shows a hypothetical case with the case's NPA factors placed in a table showing the MPNPA domains within a modified PPCT framework (table available from author upon request). Questions about the MPNPA model are shown in Appendix B. Questions in the interview guide are based on the research question and are designed to elicit feedback about the MPNPA model. Questions ask about the MPNPA model's ability to adequately conceptualize complex NPA cases, usefulness with NDD and other clinical cases, usefulness for treatment planning (in addition to NP assessment), and other possible uses, such as for training. My hope was that the interview discussions would elicit comments not only about use of the PPCT model as applied to MPNPA, but also about NPA factors that span multiple MPNPA domains and the interactions among NPA factors. Demographic information was collected to get a sense of participant culture and language, experience with NPA (including clinical groups and typical age of clients), practice setting, and level of education.

Data Analysis

Establishing framework. Consistent with grounded theory, thematic analysis was employed to thematically review the literature in order to build a preliminary framework based on general descriptions of multicultural issues in NPA and specific issues pertaining to assessment of children with NDDs. The key features of that preliminary framework were a set of multicultural factors and issues. That framework and subsequent interviews with pediatric NP assessment professionals led to development of the MPNPA model.

In the dissertation, interview results and feedback about the MPNPA model were analyzed using a content analysis as described by Ponterotto (2010). I read and coded interview notes for common themes. Areas explored included the usefulness of the MPNPA model in conceptualizing pediatric NP assessment cases and the utility of the model in possible training or practice contexts. I cannot ensure content validity—the extent to which this MPNPA model or the questions asked about the model reflect all aspects of multicultural pediatric NPA with NDDs. There may be many other ways to conceptualize approaches to MPNPA or different types of NPA cases. However, multiple realities are considered valid under the constructivist-interpretivist paradigm upon which this dissertation research is based (Ponterotto, 2010). Similarly, questions other than those included in the questionnaire in Appendix B might have elicited different types of information or perspectives on MPNPA. For the purposes of the MPNPA model as presented in the current study, I considered the MPNPA example and the set of questions in the questionnaire as specific yet open-ended enough to adequately represent the MPNPA construct. Because subject matter experts (NPA professionals) evaluated the model, participant responses likely illuminated any areas that were not adequately described in the MPNPA model.

I compiled and summarized participant responses and feedback. I used an iterative, constant comparative process to analyze data. As interview responses were reviewed and coded, they generated new themes that were incorporated into a database created to record results.

Using a constant comparative process (Ponterotto, 2010), coding took place in three phases: open, axial, and selective coding. During *open coding,* data were broken down into meaning units. That is, a few words or phrases that represent meaningful description or attitude set were compared with other meaning units and gradually integrated into larger groups. During *axial coding,* relationships between categories were further described and organized into broader categories. A constant comparative process is used at the axial coding step to compare categories against each other across participants and to look for disconfirming cases. The final phase, *selective coding,* examined the interrelationships between codes and categories and connected the codes in a meaningful and interrelated fashion to form a core story (Ponterotto, 2010). That core story informed the utility and structure of the substantive theory, which was used to determine if and how the final MPNPA model should be modified.

Credibility

A variety of techniques can be used to increase the validity and trustworthiness of research results and interpretations (Carlson, 2010). I used several techniques, including triangulation, use of research assistants (RAs), member checking, and reflexivity. To enhance the accuracy of results, data were triangulated among myself (the primary researcher), two RAs, and two member checkers. Research assistants were graduate students who had some familiarity with qualitative research. Two of my dissertation participants agreed to act as member checkers, reviewing my summary of results and giving me feedback. Investigators analyzed data, including descriptions, notable extracts, and themes, from different sources (transcripts of participant interviews and participant questionnaires). Drawing on multiple sources of information and evidence from different individuals may increase the accuracy and credibility of results and interpretations (Creswell, 2008).

Research assistants. Early in the data analysis process, I, as the primary researcher, highlighted areas of interest and generated themes from all 17 participant questionnaires. Meanwhile, two RAs—graduate students with some knowledge of qualitative research procedures—independently performed a similar process to highlight areas of interest and generate themes from several of the interview transcripts. Then I compared questionnaire themes with the RAs themes from the interview transcripts. After discussing commonalities and differences, the RAs and I reached consensus regarding themes (major and subordinate).

Member checking. To increase the credibility of my results, I utilized the services of member checkers, two of my research participants who agreed to review and provide feedback on my summary of results. As Elo and Kyngäs said (2008, p. 113), “Content validation requires the use of a panel of experts to support concept production or coding issues.” After obtaining institutional review board (IRB) approval for member checking, I contacted four of my research participants by email and asked if they would be willing to review a draft summary of my results and give me feedback. Input from member checkers will be addressed in the Discussion section. I sent each member checker a results summary and six questions to answer. The questions I asked member checkers were:

1. Are the themes clear? Would you label the themes differently or group them differently? If so, please describe.
2. Does the discussion of results make sense? Please specify if you have suggestions for making the results section clearer or easier to read.

3. Based on your understanding of the MPNPA model and the main interview questions, do the results (themes, responses to questions, etc.) seem to capture most aspects of the MPNPA model?
4. Do you think the results adequately represent professionals in the field of multicultural pediatric neuropsychological assessment?
5. Are the results consistent with your view of working with multicultural clients?
6. Do you have any additional comments about the results summary or the MPNPA Model?

Reflexivity

Throughout the interviews and data analysis phases, I utilized self-reflections, including my own knowledge of the literature and experiences during the pilot study interviews, to adapt the questioning and inform coding in an iterative, constant comparative process. Along with triangulation and member checking, reflexivity is a common method used to increase trustworthiness in qualitative research (Carlson, 2010).

I engaged in a self-reflection process to help me identify personal biases that could influence my data collection and interpretation. My self-reflections were written in a type of journal in which I indicated the date and circumstances of the interview that had just taken place, and thought about factors that may have influenced my perceptions about the interview or the participant, which may have further influenced my interpretations or impressions about the quality of the data. Additionally, I recorded my thoughts and impressions in between participant interviews and while I was in the data analysis process.

Through the self-reflection process I was able to identify assumptions that may have influenced the way I asked participants questions, preconceived notions about participant training, and uncertainty about some of the values and assumptions underlying the structure of the MPNPA model. Through the self-reflection process, I also identified aspects of power differentials between me and my participants that I encountered during the interviewing process. Being aware of power differentials allowed me to put participant responses in context during data analysis and interpretation and to consider how the MPNPA model itself might be received in different clinical and training settings. Self-reflections will be addressed in the Discussion section.

CHAPTER V

Results

Themes

Themes were categorized to provide direct responses to the main research questions, which are reflected in questions one through six of the participant questionnaire (see Appendix B). The main research questions are: When performing NPA of children suspected of having NDDs, in what ways is application of the MPNPA model helpful or not helpful for NPA of pediatric NDD cases? Is the content of the MPNPA model representative of all of the domains of consideration when assessing MPNPA for NDD? Is any content missing? If so, what? Do any of the domains take greater or lesser priority as related to culture? In what ways, if any, could the model be applied to MPNPA for NDD practice? What are the benefits and drawbacks of the model for conceptualizing cases? What are the benefits or drawbacks of the model for practice?

Theme categories. Themes extracted from participant responses were classified into categories. The theme categories were labeled as follows: aspects or characteristics of the assigned MPNPA model, specific model areas (e.g., MPNPA domains or PPCT areas), purposes for the model, target model users, target client population, and stages of the assessment process. When a response fit into more than one theme, I assigned the response to the theme that I considered to be the most salient. In cases in which several themes were equally salient for a single response, I listed the response multiple times—once for each relevant theme. Theme categories and corresponding areas are summarized in Table 3.

Table 3

Categories and Themes

Theme Categories	Themes
Characteristics of the Model	Model Characteristic Clinician Characteristic Organization Characteristic Model Usability Reminder/Prompt Liability[a] Suggested Change to Model Suggested Use for Model
Specific Model Areas[b]	NPA Instruments Time Time/Family Clinician/Team Family
Model Purposes	Training Identify Skills Supervision Consultation Collaboration/Coordination
Target Users	Trainees/New Clinicians Supervisor/Faculty Multidisciplinary/Assessment Team Other Professionals Private Practice
Target Client Population	Target Client Population
Stages of the Assessment Process	Information Gathering Select Team Select Instruments Interpret Results Write Report/Treatment Plan Deliver Feedback Follow-up/progress monitoring

[a] Refers to legal or ethical liabilities.

[b] Other MPNPA Model areas and intersections of areas emerged from the data; these are just some examples.

Major themes for each question. Themes are presented here by topics broached in questions one through six of the participant questionnaire (also see Appendix B).

Question 1: Think about how the MPNPA model might be applied in a multicultural pediatric neuropsychological assessment (NPA) case. What would be the strengths of using the MPNPA model?

The first question asked participants to describe some of the strengths of the MPNPA model. Many participants mentioned that the MPNPA model would serve as a prompt or reminder to help clinicians to think about the many factors that emerge when conducting NPA with children from diverse cultures. A multilingual neuropsychologist with 12 years of experience said:

> Especially for someone new to working with multicultural populations … it starts with the basics, explains the main challenges we face working with people from different backgrounds. Is very refined and specific at items it looks at, not too general. It explores in depth the different factors within the culture, not just general language and social culture and background/history goes into more depth.

Some of the factors mentioned included time limitations, finding appropriate testing materials, and the constraints of the agency or organization in which testing is taking place. A representative comment came from an 18-year veteran of NPA, who stated: “The model would serve as reminders to consider factors that may not have been considered, such as the demand characteristics along with resource characteristics rather than consider only one.”

Participants said the MPNPA model could prompt clinicians to think about NPA in more complex or nuanced ways or to prompt clinicians to consider other factors, such as institutional racism. Participants mentioned that the MPNPA model could serve as a useful reminder to clinicians to think about other resources and to consider that assessment goals might differ between the clinician and the organization. Other participants said that the MPNPA model served as a good visual prompt and a thinking tool. A multilingual school psychologist with over 15 years of experience said that the MPNPA model "could guide development of procedures on how to assess each child, the thought process and the information gathering."

Some participants mentioned that the MPNPA model encouraged clinicians to consider approaches to NPA other than a pathology/deficit perspective and to consider the child and family within multiple contexts. Participants also said the MPNPA model served as prompt to consider language issues, demand characteristics, resource characteristics, family interactions, and interactions between the clinician/team and family. Participants mentioned strengths of the MPNPA model to help identify bias in the clinician, assessment team, NPA instruments, or organization. Other model strengths mentioned included helping the clinician sort out aspects of the child's presentation (e.g., behavioral, organic, motivational, and cultural). Participants mentioned that the MPNPA model could serve as a prompt for clinicians to ask more questions or gather more information, and to increase clinician understanding of the child's coping mechanisms.

Many participants described certain characteristics of the MPNPA model as strengths. Model characteristics mentioned as strengths included that the model is thoughtful, structured, and specific (not too general) and that it has many levels and dimensions. Participants also mentioned that the MPNPA model has good theoretical underpinnings, highlights interconnectedness, uses accessible language, and utilizes an in-depth approach to culture. Other strengths mentioned were that the model allows examination on different scales (from in-depth to the big picture) and that the overlap between MPNPA model factors and areas reflects realworld case complexity. It is interesting to note that participants described this overlap in both positive and negative terms (some saw it as an asset, others as a detriment).

Participants mentioned additional strengths including that the MPNPA model highlights interpreter issues and instrument issues including bias, lack of culturally appropriate tools, cultural aspects of instruments, nonstandard use of instruments, and validity. Many participants mentioned that the MPNPA model prompts consideration of time as a factor in NPA including time constraints, cultural savvy (i.e., test-wiseness), consideration of the role of historical events, and differential functioning of the child over time. As one experienced school psychologist said, “Sometimes focus is too much on the moment and what is occurring with less consideration that the assessment is only a snapshot of the examinee’s life.” Participants also mentioned that the MPNPA model specifically encourages consideration of interactions between time and the family. These interactions include cultural perceptions of time, priorities, punctuality, scheduling issues, and time-related negative attitudes toward the family by the clinician or assessment team.

Some participants described model strengths related to specific stages of the assessment process. Strengths related to stages of the assessment process included usefulness of the model for helping select instruments, selecting the assessment team based on child or family characteristics, and delivering feedback to the family. A bilingual neuropsychologist with 17 years of experience commented on the usefulness of the MPNPA model over time:

> The levels and components of the model have you consider what could be contributing to the behavior….You want to identify the proximal cause of the behavior and the underlying issues, which you want to address over time. It’s an iterative process. Once

> you address the proximal cause you can reevaluate in 6 months or a year, see how they're progressing, and then tackle the next underlying factors.

Some participants described purposes of the model as strengths, including using the MPNPA model to prompt cultural consultation, identify clinician skills, and for use as a supervision tool. Several participants described the MPNPA model as useful for new clinicians and trainees—both those who are new to NPA and those new to working with multicultural clients.

Question 2: What would be the weaknesses of using the MPNPA model? The second question asked participants to describe some of the weaknesses of the MPNPA model. Most participants described certain aspects of the MPNPA model's usability as weaknesses. Model usability weaknesses included that the model is tedious, time-consuming, and not easy to use. A multilingual school psychologist with 15 years of experience said that the MPNPA model involved "a lot of work, a lot of mental effort, a lot of time devoted to the process of thinking through each case."

Some participants said there are too many boxes in the MPNPA worksheet. Some said that they feel a need to fill in all the boxes or that they can't tell which box to put information into. In addition to difficulty with the layout or number of boxes, some participants described difficulty completing the worksheet in some areas more than others. One school psychologist said "I can fill out a lot for the child and family; it's harder to critique the clinician/team and organization domains because I'm so embedded in it."

Some participants described the paper version of the MPNPA model as impractical for use in the field, or for use in every case. Some mentioned that it is too thorough for practical use, and that the model is easier to complete for some domains (e.g., child and family) than others. One participant mentioned that because some factors can't be changed (e.g., family dynamics, organizational or instrument limitations), completing the model served no practical purpose. A participant said that the model lacks utility because the clinician doesn't know the information in advance of the assessment.

Many participants mentioned specific model characteristics as weaknesses. Characteristics mentioned as weaknesses included that the model is too complicated or complex, too broad, and that there are too many dimensions and interactions. A multilingual neuropsychologist with 17 years of experience who described the MPNPA model's broadness as a weakness said:

> This is so broad, you want to help people not lose the forest for the trees….this [model] is a lot of trees. Remember that you're able to go back and forth between considering all the details and the big picture. This is a weakness of all models.

Other weaknesses mentioned that there is too much overlap between boxes and all factors in the model are weighted equally. A clinical psychologist with 18 years of experience said that the MPNPA model is "written as if it's discrete, but it flows. With familiarity that becomes less of a problem. You explained that things cross over into several categories." Some participants mentioned difficulty organizing their thinking around the model, difficulty with the theoretical aspects of the model, and unfamiliarity with the Bronfenbrenner model. A participant said that clinicians might overlook pathology by attributing too much of the child's presentation to culture and other factors.

Several participants said that the MPNPA model could be difficult for a clinician with rigid or linear thinking, resistance to change, or less experienced clinicians. One multilingual, multicultural school psychologist with 10 years of experience said that "people don't want to think differently and don't want to be taught how to think differently if it's not part of their belief system about how things are and how development occurs." Some cited organizational resistance to change and other organizational factors such as lack of administrative support to implement the model. One multilingual clinical psychologist with 10 years' experience suggested providing more guidance for the instruments, such as more examples or a page of guidelines, explaining that:

> Some people think an instrument has really good norming data, but it doesn't really, especially ethnicity or SES. Some tests have low number of African American kids or those that are low SES, so it wouldn't be a good instrument to use.

Question 3: In what ways could the MPNPA model be useful for case conceptualization of multicultural NPA cases of children with neurodevelopmental disabilities (NDDs) such as autistic spectrum disorders, PDDs, or intellectual disabilities? Question 3 asked participants how the MPNPA model could be useful for case conceptualization. Many participants said that the MPNPA model could serve as a useful reminder to clinicians prompting them to look further and consider all factors important to making a diagnosis and prognosis. Many participants said the MPNPA model could help clinicians conceptualize interactions, identify strengths, and understand parental factors. A multilingual school psychologist with 10 years' experience said "a model like this would make me understand better…I went from overpathologizing the parents to underpathologizing them, to understanding them." A clinical psychologist with 18 years' experience working with individuals with developmental disabilities said:

> Too often only the disability is assessed and not how that person functions or contributes to the family in a positive way; the focus is usually on the struggle, not the fun. This model can force a change in that perspective.

Participants said that the MPNPA model could also help them break things down, tease out influences on behavior and presentation, and help with contextualization to inform treatment recommendations. Some participants said that the MPNPA model encourages clinicians to think about the child in context, examine issues in all domains (e.g., organization, instrument, and clinician/team columns), and examine larger system issues. In discussing considering the child in context, a pediatric neuropsychologist with 10 years' experience said:

> It's easy when you're spending 6 or 7 hours with the child not to remember that you're not the only system, that's not the only way they interact with others, the way they interact with you in a small room, 1-on-1 with breaks… that isn't how they're going to be at school, at home with other systems.

Participants said the MPNPA model prompts clinicians to consider culture, cultural expectations about adaptive behavior and development, and all contextual/environmental factors relevant to intervention. Participants described the MPNPA model as useful to highlight interpreter issues, help identify factors indirectly reinforcing the child's behavior, and highlight cultural differences between the family and the clinician/assessment team. One bilingual school psychologist said "this might be useful with families who won't point out cultural differences. You might have a family who won't say 'these questions bother me,' or 'you Americans embrace independence more than we do."

Some participants said the MPNPA model could remind the clinician of other available resources and help clinicians understand where they might be overpathologizing. A multicultural, multilingual school psychologist with 13 years' experience said that "conceptualization can help clinician move away from pathology-driven diagnoses to conceptualization that leads to recommending interventions to support what the child and family needs."

Participants said that the MPNPA model could be useful throughout the assessment process for differential diagnosis, to facilitate more accurate predictions or prognoses, and to help brainstorm and prioritize treatment recommendations. Participants said the model could be useful at the beginning of the assessment process to develop a set of questions or a questionnaire to focus information gathering. One school psychologist said "some areas I didn't really know about this student's system based on what I already heard, so there's more I would want to ask the parent." Many participants described the MPNPA model as potentially useful to select instruments and interpret assessment results. A participant said that information from the MPNPA model could be useful to facilitate parent/family understanding when delivering feedback. Participants also mentioned that the MPNPA model could be useful while writing a report or treatment plan to facilitate strengths-based recommendations and select more useful treatment options.

Some participants mentioned that the MPNPA model is particularly suited for children with atypical development and that the model could be useful in all cases, not just multicultural cases. Some participants described the MPNPA model as child centered and said that the MPNPA approach is a paradigm shift for some clinicians. Many participants described the layout of the MPNPA model as a useful way to keep information organized.

One participant suggested using the MPNPA model to make a pattern or cultural map of the child and family. Several participants described the MPNPA model as a good teaching tool for students and trainees. A multilingual, multicultural 25-year veteran clinical neuropsychologist described the model's potential in training: "Students are learning; they're overwhelmed, they don't think about this, or how to apply it overall. If you have the road map, you can see how the pieces fit together." Some participants mentioned that the MPNPA model could be beneficial for other multidisciplinary team members—such as social workers, case managers, or resource specialists—to use on their own or in a collaborative context.

Question 4: In what ways could the MPNPA model be detrimental for case conceptualization of multicultural pediatric NPA cases of children with NDDs? Question 4 asked participants how the MPNPA model could be detrimental for case conceptualization. Several participants mentioned that the MPNPA model could lead the clinician to *under*pathologize a child by seeing many factors but not seeing how they come together. Some participants said that a clinician might *over*pathologize a child (described as symptom overshadowing). Several participants said that a clinician could get lost in the details of the MPNPA model, risk losing perspective by looking at how everything is interconnected, or be less open to other possibilities or explanations because there are so many categories. One multicultural, multilingual school psychologist said:

> If you're always looking at how everything is interconnected, you can fall into relativism and not decide anything, and that would limit access to resources and services. Without labeling something or giving a diagnosis, you can get lost in how everything affects everything else.

Some participants said that the MPNPA model could lead clinicians to attribute too many aspects of a child's presentation to cultural factors or could be a problem if used in an overly cautious manner. Conversely, as one multilingual clinical neuropsychologist explained, "If we take this too literally, without the proper training, people may try to find every little thing and overlook cultural issues." Additionally, cultural assumptions could mislead a clinician and if the MPNPA model were used by only one clinician there could be bias and validity issues. Several participants said that certain clinician characteristics, such as prejudice and assumption, could be particularly detrimental to case conceptualizations. Some participants said that new clinicians tend to overpathologize and that use of the MPNPA model must be combined with clinical judgment. Some participants said that organizational problems or documenting information elicited by the MPNPA model might become a liability if that information were subpoenaed in a lawsuit. Several participants described the MPNPA model as detrimental to case conceptualization because the model is time consuming. One bilingual 17-year veteran clinical neuropsychologist said "if you don't get it done, your recommendations are no longer useful. It's important to have reports done in a timely fashion." The same clinical neuropsychologist also said "there's some thoroughness you have to let go of to provide services within a budget and timeframe that will be useful."

Some participants described aspects of the MPNPA model as drawbacks that really seemed to be assets. A few participants said that use of the MPNPA model might point out organizational problems or a lack of appropriate instruments. A school psychologist said this about the MPNPA model:

> It could open the door to lawsuits if the organization is not doing what they're supposed to. So ultimately this would be a good thing, because we might start doing what we're supposed to, but it would be problematic initially.

Some participants said that the MPNPA model is too complex and that the structure could reinforce preconceived notions about a family. One participant mentioned that the MPNPA model could be detrimental to case conceptualization because the model produces a narrative, rather than something objective (such as a completed protocol with a score summary on a standardized assessment). One participant mentioned that the family might reject the diagnosis or refuse services or recommendations. Several participants said that they did not think the model could be detrimental to case conceptualization.

Question 5: In what ways could the MPNPA model be used for treatment planning in multicultural pediatric NPA cases? Question 5 asked about the MPNPA model's potential uses for treatment planning. Many participants described uses such as viewing the child in context to inform treatment recommendations, tapping into the parents' understanding of the child, and taking the child and family as a unit together. A bilingual clinical neuropsychologist with 10 years' experience said the MPNPA model could help clinicians think about "what the child needs, what the parents need, what the siblings need, do they need services together? … taking the family as a unit, not just focusing on the child."

Participants described further uses such as helping clinicians understand the case, identify needs and goals, and address behavioral and force characteristics in the treatment plan. Several participants said that the MPNPA model could help increase awareness of family culture and cultural differences which could lead to better collaboration. One school psychologist said "you're taking steps necessary to provide the support without insulting the family and their background." A multilingual clinical neuropsychologist discussed the importance of considering whether interventions are a good fit for a particular child in context: "Is this intervention the right fit for this child in this school given the cultural expectations in the school?"

Some participants said the MPNPA model helps increase awareness of how all systems work together, which is critical to treatment planning. One participant said that the MPNPA model facilitated increased awareness of systems, dynamics, community, relationships, and time constraints, which could be useful to inform treatment recommendations.

Several participants said that the MPNPA model could prompt clinicians to recognize things that cannot be changed about a child or the environment and to consider whether an intervention would be a good match for the child and family. Some participants mentioned the MPNPA model as useful to identify areas of unmet needs or areas that need further testing or more information. One multilingual clinical neuropsychologist said that the MPNPA model "prompted me to think about cases in which the child has been overlooked in some way, to think about what interventions we can provide right now for things that have been overlooked."

The MPNPA model was also described as useful to identify strengths and weaknesses and to identify inappropriate interventions and recommendations. One school psychologist said:

> It helps rule out things that would not be appropriate based on where they are now. For this student we recommended certain community interventions, but there was a new baby in the house and there's no childcare, so that might be less appropriate.

A participant said that a treatment plan produced using the MPNPA model would offer many treatment options. Participants described the MPNPA model as useful during several stages of the assessment process, particularly at the report writing, treatment planning, delivering feedback, and follow-up stages. Participants said that at the report writing and treatment planning stages of the assessment process, the MPNPA model could be useful to increase awareness of team and organization limitations to brainstorm who can provide services or interventions. Several participants said that the MPNPA model could also be useful earlier in the assessment process. For example, clinicians could use information about the child and family to inform selection of NPA instruments or assessment team members. As an example, having information about a family's dialect, literacy, or beliefs about gender roles, might influence a clinician about what interpreter or translator characteristics would be a good match for that child and family. Use of the MPNPA model at various stages of the assessment process could contribute to different levels of rapport with a child or family, administration of different test instruments, and a clinician's choice about what assessment scores to report, and how to interpret results, write reports, and deliver feedback to the family.

The MPNPA model could be useful to tailor treatment to the individual child and family and as a prompt to add any missing resources to the treatment plan. A participant said that when delivering feedback to the family, "the model helps clinicians provide information parents really want to know." Participants mentioned that at the follow-up stage, the MPNPA model could be a useful tool to guide a post-assessment team discussion and that a treatment plan developed using the MPNPA model provides tools and information for follow-up.

Some participants said that the MPNPA model helps create more culturally sensitive language when discussing treatment recommendations and helps optimize the child's treatment. One school psychologist said that if certain boxes of the MPNPA model are heavily loaded, those areas can be targeted in the treatment plan: "For example, the demand characteristics of a child, such as appearance or presentation, could lead to interventions that focus on facilitation of independence." Some participants said that the MPNPA model could help facilitate integration or coordination of treatment or guide clinician and team discussion of assessment validity, and that the MPNPA model could be used as a rubric or template for team discussions. A participant said that the MPNPA model facilitates more descriptive diagnoses. Another participated suggested that if the MPNPA model were more user-friendly, it would be useful for brainstorming interventions if presented as a table in the assessment report.

Question 6: Please share any additional comments about the MPNPA model or this topic. Some of the responses to question 6 were applicable to questions 1 through 5; in those cases, I moved those responses to the earlier questions. Some participants suggested that the MPNPA model could be used as a business plan for a new department or program or a consultation tool. One participant suggested creating a supplemental insert of common testing instruments to guide clinicians (e.g., information about psychometric properties, norming populations, language and culture loading, etc.). Another participant suggested expanding the MPNPA model into an educational model for kindergarten through grade 12 classroom teachers and administrators. Several participants suggested creating different versions of the MPNPA model, including a case assessment insert for clinicians and creating parent, clinician, teacher, and teen versions. Several participants suggested creating a more useful format for clinical and field use such as a website, computer application, or mobile app. Some participants suggested publishing the MPNPA model as a book or an article so that clinicians can access and use it. Many participants described the MPNPA model as a useful supervision tool, a tool to teach cross-cultural neuropsychology, and a training tool for interns and practicum students.

Many participants suggested making the MPNPA model more user-friendly by making it into a color-coded wheel, using pictures, or creating a 3-D cube. Several participants said that whittling down the MPNPA model, condensing or simplifying it, or reducing the overlap between model areas might make the model more user-friendly. One participant suggested including some multiple choice and checklist items would make the MPNPA model more user-friendly, while another participant suggested shortening the current MPNPA model from 11 domains to 5 or 6 rows.

Several participants suggested changes to improve the MPNPA model including using abbreviations, having less wording, and simplifying terminology. A few participants suggested presenting the MPNPA model along with more completed cases, examples, and explanations. One participant suggested adding culture-specific observation guidelines within the instruments section. Several participants seemed confused by the concept of proximal processes, and one participant suggested delineating proximal processes and demand characteristics, saying that operationally they feel similar. One experienced clinical neuropsychologist suggested including an “other” box as a gut-check. The participant said the clinician could ask the child and the parent what would help, and include that information—as well as one’s clinical intuition—in the “other” box. Some participants said that it is useful to retain the completed MPNPA worksheet as part of the data collected, that the model is useful because it is organized, and that the model could change the way assessments are done.

Participants mentioned some negative aspects to the MPNPA model, including resistance to change (individual and organizational), the fact that the model elicits factors and information that may not be actionable, and that the model requires training and explanation. One school psychologist said that “inconsistent reporting and usage could lead to differences in how a child is viewed, such as at triennial re-evaluation.” The same school psychologist discussed how implementation of the MPNPA model could make the difference between it being beneficial or detrimental: “If the model was implemented appropriately within an organization from the get-go it would be good, but if the organization doesn’t agree to initially implement on its own, it could be a problem.”

Some participants said that the MPNPA model could work with all age groups and would work for other populations (not pediatric, non-neuropsychological cases). A multilingual participant with 25 years' experience as a clinical neuropsychologist said that "You're sensitizing people with your tool. We have to educate clinicians and trainees about cultural competence.…people in the applied world, in clinical practice, really need something like this." Another participant said that in training clinicians in use of the MPNPA model, it would make sense to teach the Bronfenbrenner model first, then go through a non-NP case, then build up to a NP case. Several participants mentioned that a webinar, tutorial, or book might be a useful format for training clinicians to use the MPNPA model.

A few participants mentioned that use of the MPNPA model would depend on the organization and its resources. Some participants said that the MPNPA model encourages expansion of the notion of culture and that it identifies factors that are not usually addressed in treatment plan or mentioned in reports. One participant said that the model stimulates a lot of thought. Another participant mentioned that the MPNPA model would be particularly suited to clinicians in private practice.

Some participants discussed the model's usefulness in NPA in general and in particular cases. A multilingual clinical neuropsychologist said that clinicians can "use the model and preliminary information about the client, such as the referral information or records, as guidance to develop an observation checklist." A clinical psychologist discussed not using the paper MPNPA model in the field, but learning it in order to apply it to cases: "It would help inform my assessment process of kids, not based on reviewing the paper, but by being familiar with it. I would incorporate it thinking on my feet." A multilingual clinical neuropsychologist described the MPNPA model as encouraging approaches to NPA that are not necessarily deficit-oriented: "We are looking at the system that the person lives within rather than thinking there's a default position and thinking that everything else is aberrant from the main position." A school psychologist said:

> It was good for me to go through the MPNPA model, especially on this case… It brought up certain things for me that are goals to strive for…if we could help him in this area, we might see more success.

Major themes that emerged across all questions. Major themes that emerged across all six questions can be summarized in terms of three major factors: general uses of the MPNPA model in the pediatric neuropsychological assessment field, the MPNPA model as an aid to case conceptualization, and uses in treatment planning. A summary of major themes is presented in Table 4.

Major themes can also be described as suggestions for other uses for the MPNPA model (in addition to case conceptualization or treatment planning), and suggestions for improving the model. Suggestions for other uses included to provide more guidance for NPA instruments, provide more teaching about the Bronfenbrenner PPCT model, and provide more case examples to illustrate use of the model. Several respondents said the MPNPA model could be a useful teaching tool for students and trainees, as well as a good tool for supervision. Some respondents said the MPNPA model could be useful for other multidisciplinary team members (e.g., social workers, case managers, classroom teachers, and resource specialists). Some participants suggested that the MPNPA model could be used as a consultation tool or a business plan for a new department or program. Several participants suggested formats that could be more useful for clinical use such as a website, computer application, or mobile app. Other participants suggested publishing the MPNPA model as a book with case examples and exercises for training purposes. Some participants suggested that the MPNPA model could be useful across the lifespan (not just for children) and for other clinical groups (not just those with NDDs).

Table 4

The MPNPA Model: Summary of Major Themes

MPNPA Theme Area	Strengths	Weaknesses
General uses in pediatric neuropsychological assessment	• Increases clinician awareness/understanding • Prompts consideration of other factors • Visual prompt • Thinking tool • Helps identify bias • Model is thoughtful, structured, and specific • Facilitates in-depth approach to culture • Encourages approaches to NPA that are not necessarily deficit-oriented • Good theoretical underpinnings • Prompts cultural consultation • Useful for new clinicians and those with less multicultural experience • Facilitates more accurate predictions or prognosis	• Not user friendly • Impractical • Too complicated or complex • Too broad • Too many dimensions and interactions • Too much overlap between areas/boxes • Unfamiliarity with the Bronfenbrenner model • Could lead to under- or overpathologizing • Resistance to change (clinician, organizational)
Uses in case conceptualization	• Leads clinicians to consider other factors and hypotheses • Helps clinicians conceptualize interactions and identify strengths • Encourages clinicians to think about the child in context and examine larger systems issues • Highlights cultural differences between the family and clinician/team • Helps identify factors indirectly reinforcing child's behavior • Useful for information gathering • Useful for instrument selection • Useful for delivering feedback to family	• Clinician might underpathologize or overpathologize • Too complex • Structure could reinforce preconceived notions about a family • Cultural assumptions could mislead a clinician • There could be bias and validity issues if used by only one clinician • Time consuming

(Table continues)

MPNPA Theme Area	Strengths	Weaknesses
Uses in treatment planning	• Helps clinician view the child in context to inform treatment recommendations • Helps identify needs and goals • Increased awareness of family culture and cultural differences could lead to better collaboration • Awareness of systems, dynamics, community, relationships, and time constraints may inform treatment recommendations • Facilitates consideration of whether the intervention would be a good match for the child and family • Helps identify areas of unmet needs • Helps identify strengths and weaknesses • Helps identify inappropriate interventions and recommendations • Helps prompt clinician to add missing resources to treatment plan • Use provides tools and information for follow-up • Facilitates more descriptive diagnoses	• Not user friendly • Would be more useful for brainstorming interventions if presented as a table in the assessment report • Requires training and explanation • Identifies needs that may not be actionable

Suggestions for improving the model included making it more user-friendly, which would make it more useful for brainstorming interventions, make it less onerous to use on actual cases, and make it more accessible as a tool for training, supervision, and teaching about multicultural assessment. Participants gave many suggestions about how to make the MPNPA model more user-friendly including specific formatting suggestions such as making it a 3-D cube, illustrating it with pictures, or making it into a color-coded wheel. Other suggestions included simplifying the terminology, condensing the model, or reducing the overlap between boxes.

Self-reflection

The self-reflection process helped me to identify assumptions that may have influenced the way I asked participants questions, preconceived notions about participant training, and uncertainty about some of the values and assumptions underlying the structure of the MPNPA model. The self-reflection process allowed me to put participant responses in context during data analysis and interpretation and consider how the MPNPA model itself might be received in different clinical and training settings.

One of the things I noticed from the first interview was how power differentials influenced the way I interviewed participants, how they might perceive me, and how I interpreted the data. On one hand, I held a position of power as the researcher, compared to the role of participant. On the other hand, I am a graduate student and still a trainee in clinical psychology, while my respondents are all practicing clinicians with licenses and jobs. One possible exception would be with the seven participants who are school psychologists. With my own background as a school psychologist, there might be less of a power differential between me and the participants who are school psychologists. However, I felt that my status as a graduate student probably outweighed any status I might have as a non-practicing school psychologist. I wondered how the participants perceive my credibility as someone who is asking them questions or developing a model in an area in which I have relatively less experience and expertise than they do.

There were different reactions among respondents based on work setting, profession, type of graduate education and training settings, clinical populations served, and various workplace issues. I was aware in every interview about how the respondent might view the MPNPA model based on differences between me and the respondent in age, culture, language, immigration history, or perceived status. For example, my status as a multicultural, bilingual interviewer may have influenced participants' perceptions of the MPNPA model and their willingness to be forthcoming. Some participants asked me about my training, ethnicity, immigration history, and languages, and then revealed their thoughts about issues with multicultural assessment and the lack of cultural competency training in graduate programs. I wondered whether these participants would have been as open if they had thought I was a native English speaker or assumed I was from the majority culture. This made me wonder about whether they viewed me as an outsider (e.g., not a professional, just a student, from the majority culture) or as an insider (e.g., not from the majority culture, someone who could relate to their experience doing multicultural assessments, someone who has dealt with organizational constraints and caseload challenges). While I did not systematically collect information about whether each participant viewed themself as a cultural insider or outsider, I did ask participants about language (primary, other languages, fluency) and cultural identity. I identified 47% of my sample as multicultural and 65% as bilingual or multilingual. I wondered about whether participants would have responded differently to interview questions if they had viewed both themselves and me as cultural outsiders (or insiders), or if they had viewed themselves as having a different cultural insider or outsider status than me. I think having roughly equivalent representation by multicultural and majority culture participants, as well as by multilingual and monolingual participants, in my sample allowed sufficient cultural insider-outsider combinations (between interviewer and participant) to yield interesting and meaningful results.

After reflection, I realized that going into the interview phase of this research I had many assumptions. I made assumptions about participants' familiarity with Bronfenbrenner's model, similarities in graduate training, emphasis on multicultural issues in graduate training, and training in assessment. I neglected to fully consider the implications of different organizational challenges and available resources in different professional practice settings. For example, in some settings clinicians are subject to pressures to maintain certain billability levels, limiting the amount of time they can spend on each case, regardless of cultural or linguistic aspects of the case that would merit them spending more time on the case. Some organizations have fixed batteries of tests that are administered to all clients who present with specific referral issues regardless of language or culture. Other organizations have limited access to test kits that are up to date or well-validated for use with cultural or linguistic minorities. Thus, clinicians may feel an ethical responsibility to perform culturally and linguistically appropriate assessments, while also feeling pressured or constrained by organizational policies or practices or limited resources within their organizations. I also made assumptions about participant values. For example, I found that although most respondents shared my enthusiasm about unmet needs for culturally competent assessment, not everyone expressed the same interest or passion. In fact, some participants seemed more focused on venting about organizational challenges or parents of the children they were assessing. One or two participants seemed uncomfortable during the interview, giving minimal responses to questions. This made me feel uncomfortable, and I had a desire to end those interviews more quickly. I wondered whether was something about me, the model, or the interview setting was making my participants uncomfortable, or whether some other issue led to uncomfortable interviews. For example, some participants may have been experiencing pressures from a heavy caseload or deadlines. If participants were experiencing job- related pressures, they could have been preoccupied or felt uncomfortable spending time in a research interview with other tasks and deadlines looming over them. I wondered whether I might have gotten different responses had I interviewed them in a different manner or at a different time or place.

Reviewing the MPNPA model and the interview process itself seemed to evoke a sense of frustration or helplessness in some respondents. Asking participants to focus on organizational challenges or limitations of test instruments or training seemed to lead some participants to get stuck in their frustration about the very organizational challenges they were discussing. This is something I need to keep in mind moving forward: if I am going to teach the MPNPA model to clinicians or trainees, I need to allow time for them to process their frustration and provide a forum in which they can brainstorm possible solutions to overcome their challenges.

Things that I feel went well in the research process included choosing to interview different types of professionals (clinical psychologist, clinical neuropsychologist, school psychologist) in different practice settings (e.g., hospitals, private practice, outpatient clinics, Regional Center, public schools). This allowed me to elicit different needs and challenges in different practice and training settings. I also was fortunate to have a diverse sample with broad representation among clinicians with varying years of experience (2 to 25 years), education, and training. I found there were different perspectives among the multicultural or bilingual participants and the majority culture participants. I was also able to identify trends in types of responses between those participants with many years of practice experience versus newer clinicians.

In future research, I would like to do some things differently. I would like to think more about my assumptions, biases, and values before initiating interviews. Having insight into my biases and assumptions might make me more open minded to views that differed from my own, which might allow me to glean a broader range of input about the model. Being aware of my biases might help me come across as less judgmental, which could increase rapport with participants. Greater rapport could encourage participants to freely share their opinions and ideas, which could lead to a more diverse data set. I would like to give more consideration to whether my questions are pulling for certain types of responses. For example, in my dissertation interviews I made assumptions about participants' beliefs, values, learning styles, and training that led to my being impatient or irritable when a respondent did not share my views or understanding about multicultural children or families. I found myself making judgments that participants lacked training because they did not understand some examples in my model. I would like to be more prepared in the future so that I can fully respect my participants for whatever values they hold or opinions they express. I appreciate the time all my participants took to share their thoughts with me about my model, and I value their honesty. I believe examining my own biases and assumptions will make me a better researcher in the future and will lead to more meaningful interactions with participants and more accurate interpretation of data. I feel that I can learn from my self-reflection about the current research interviews, and apply that learning to a more aware approach to future research interviews. If I carefully consider my values, assumptions, and biases, I believe I will be able to construct interview protocols or survey questions that are more neutral, and that allow participants the space to honestly express their opinions, even if they differ from mine.

Input from Member Checks

I asked four research participants if they would be willing to review my results write-up as member checkers. Two participants agreed to review results. After incorporating input from research assistants, I modified my results write-up, which I then presented to my two member checkers along with several questions (see Chapter IV: Methodological Approach).

Responses from member checkers helped me further organize my results section by theme, echoing some of the same major themes identified by my research assistants. Some of the comments from the member checkers helped me think of different ways to organize and present my results in this dissertation. Member checkers were very supportive, making suggestions for how the model can be taught and presented to people in different fields or subspecialties, and they encouraged me to do further research with the MPNPA model.

CHAPTER VI

Discussion

Most Salient Results

Positive responses that seem most salient across all the questions include the MPNPA model's usefulness as a thinking tool that provides an opportunity to view a child and family in a larger context and prompts more in-depth thinking about cultural considerations. Across questions, respondents commented that the MPNPA model facilitates a more nuanced examination of a child and about the cultural interactions between the child, family, assessment instruments, and clinician or assessment team. Participants commented that the MPNPA model allows for a non-deficit-oriented approach to NPA and facilitates more accurate differential diagnoses and treatment recommendations.

Negative responses or criticisms of the model that appear most salient across all questions included the need to teach or explain the model and the need for more illustration with case examples, as well as comments about the need to simplify or better define terminology. Many respondents highlighted the MPNPA model's lack of user-friendliness or need to eliminate or better explain redundancy among the boxes. Several respondents commented about how the MPNPA model could lead to either over- or underpathologizing and how the model might be more difficult for inexperienced clinicians to grasp.

Unexpected Outcomes

Many of the responses were what I would have expected based on responses to the earlier study looking at cultural factors in pediatric NPA of children with NDDs. However, some comments were less expected. For example, while I hoped that participants would comment on the MPNPA model being a good organizational tool that could be useful to highlight interactions among multiple factors, I did not expect anyone to comment that the MPNPA model could further muddy the diagnostic picture. The quote in which the model complexity was compared to not being “able to see the forest for the trees” was particularly notable. Some unexpected responses focused on using the MPNPA model to identify a child’s and family’s strengths, rather than viewing everything through a pathology or deficit lens.

Although I identified the importance of the organizational domain in the MPNPA model, I was not able to come up with examples of organization factors in some of the boxes on the MPNPA model example (available from author upon request). However, one of the participants described this in a way I had not previously thought of, explaining that it is easier to complete the MPNPA model worksheet for the child and family than for the clinician/team and organization domains, because “I’m so embedded in it.”

Overall, many of the responses addressed issues that were on my mind when I reflected on results from my first project and subsequently constructed the MPNPA model. Some of the responses were expected, based on my own limited experience with multicultural pediatric NPA. Many of the comments were unexpected (e.g., that the model could further complicate the diagnostic picture). However, I was touched by participants’ willingness to be so open and forthcoming with me about their own organizational and training challenges. The participants discussed day-to-day work challenges, illustrated by rich case examples that I never would have thought of. Some respondents discussed potential challenges learning or using the MPNPA model based on their own graduate training, professional preparation, learning styles, or organizational challenges.

Influences of Self-Reflection

Power differentials between me and each participant may have influenced the way I approached interviews with participants, how they perceived me, and how I interpreted the data. If a participant perceived a greater power differential, for example viewing me as someone without assessment expertise or as graduate student placing demands on the participants limited time and energy, that participant may not have invested as much attention in the research interview or may have been less forthcoming during the interview than another participant who did not perceive a power differential in the same way. In interviews in which I perceived a large power differential—for example, interviewing a clinician who is active in professional organizations or training programs to which I might someday submit requests or applications—I might be more reluctant to probe or clarify responses than in interviews in which I perceived less of a power differential. Similarly, I might have given more credence to interview responses when I perceived a greater power differential between myself and the respondent. For example, I might have put more weight on a response from a clinician with 25 years of NPA experience, or on a response from a clinician with expertise in multilingual assessment or who teaches about cultural competent assessment, and give less weight to responses from clinicians with only a few years of practice experience.

Making assumptions about participants' beliefs, values, learning styles, and training could have influenced my findings in several ways. First, the choice of terminology I used in the model is more reflective of my own training and understanding of ecological models. Reflecting on comments from several participants about the terminology used in the MPNPA model or presentation of the Bronfenbrenner ecological model made me wonder about whether more participants would have perceived the MPNPA model differently if I had used different terminology, better defined terms, or spent more time reviewing the Bronfenbrenner model with participants.

My assumptions that participants shared my values about the importance of culturally sensitive assessment and the rights of cultural minority children and families may have influenced my reactions to participant comments or changed the rapport between me and participants. A strong reaction from me could have limited a participant's willingness to be forthcoming during the interview. As I reflected on my judgmental reactions to some participant comments that did not resonate with my beliefs or values, I wondered whether I was so busy judging that I had missed something important the participant was telling me.

Further reflection on my interpretation of results suggests that I may have selectively given more weight, or credence, to responses that supported my preconceived notions about the MPNPA model, were consistent with my own values, or to responses that were common among a majority of participants. Similarly, during the coding and interpretation phases of the research, I know I tended to emphasize responses from participants who I perceived of as experts in the field: generally multicultural or multilingual participants with many years of experience over the responses from less experienced, monolingual, or majority culture participants. I also tended to give more credence when several participants offered the same response to an interview question. However, it is important that I also focus on the minority voices among my participant sample: those participant responses that were not echoed by other participants, were not reflective of my ideas about my own model, or that would have involved significant changes to the model. For example, some participants pointed out that the overlap among boxes was confusing, all factors in the model are weighted equally, and the terminology is confusing. Although I decided not to revise the MPNPA model for the purposes of this dissertation, when I do move forward with the model, I will need to carefully consider the concerns that *all* participants raised. If I plan to continue research or further develop the MPNPA model, especially in a graduate training context, I need to consider how the complex nature of the model might be confusing to trainees, and think of ways to present the model to make it less confusing and more useful,

Consideration of negative feedback about the MPNPA model, especially from a minority of my participant sample, may suggest revisions I should make to the model as well as approaches to teaching the model. I could, for instance, present the model one domain or one PPCT area at a time, giving case examples to illustrate each concept. I could provide more background about the Bronfenbrenner PPCT model. I could present vignettes based on actual cases and collaborate with participants to think of ways to conceptualize the case using graphic representations of different portions of the MPNPA model. It might also be useful to have modules to expand on specific areas of the model, such as a guide to psychometric, linguistic, and cultural properties of specific NP instruments, or an overview of issues to consider when using interpreters or translators. It is essential that I continue to collect data about how the MPNPA model is being used and solicit feedback about obstacles, challenges, and suggested changes. Then I can adjust the model—or if not the model itself, the way it is presented—so that it becomes a practical, useful tool for trainees and clinicians.

Adjustments to Themes

I initially analyzed data from all interview transcripts and questionnaires and generated a list of preliminary themes, sub-themes, and notable quotes that exemplified themes. I also asked two research assistants to review three interview transcripts and generate their own list of major themes. I then presented a revised results write-up to two member checkers, along with several questions about the results.

Feedback from research assistants. Each research assistant looked at the same three interview transcripts. Feedback from the two research assistants helped me to refine my original list of themes to a much smaller list of themes. They also helped highlight themes that were common across questions and participants. Research assistant feedback helped me think about themes in a different way and think of ways to organize and present results. Additionally, one of the research assistants made some interesting observations about the discourse and tone of the interviews. For example, the research assistant noted that one participant spent a lot of time asking clarifying questions about the Bronfenbrenner model, while another participant who showed previous familiarity with the Bronfenbrenner model was more focused on the MPNPA worksheet and did not answer interview questions in a linear fashion. A third participant was so focused on examples of cases requiring cultural sensitivity that the respondent needed frequent redirection to synthesize thoughts about the model itself, rather than focusing on specific case examples. Observations from the research assistants about the interview discourse led me to self-reflect on the validity of the data and what I might have missed in my data analysis. I revised my initial results write-up based on input from both research assistants.

Influences of input from member checks. Comments from the member checkers helped me think of different ways to organize and present my results and echoed some themes identified by the research assistants. Member checker suggestions about how to teach and present the MPNPA model to people in different fields or subspecialties prompted me to consider whether responses from other participants reflected confusion or misunderstanding about the model or were relevant to a particular field or setting, or what other factors may have influenced participant responses. Member checker input also helped me further reflect on how I had originally interpreted the data and other ways I might look at the data. Overall, member checker input offered me an opportunity to review my data and findings again and reexamine and refine my interpretations.

Input from research assistants and member checkers helped me to look at my data in different ways and made me feel like I was on the right track regarding major themes that I identified from the data. Feedback helped prompt me to engage in more self-reflection and look at what factors may have influenced participant responses to my questions, rather than simply focusing on the answers to the questions themselves. Overall I felt that these extra sets of eyes helped increase the validity and credibility of my interpretation of results.

Revising the MPNPA Model

Based on my own self-reflection and input from participants, research assistants, and member checkers, I realized that many of the criticisms of the model had to do with its lack of user friendliness. Many of the comments seemed to relate to difficulties with terminology or lack of familiarity with the Bronfenbrenner PPCT model. Other comments described a desire for more case examples or confusion about overlap between the boxes in the MPNPA model. I thought about various ways I could incorporate respondent suggestions and make the model more user-friendly. I thought about simplifying the terminology, reducing the number of domains or PPCT rows. However, other participants had commented that the terminology and the number of PPCT rows means that the MPNPA model has sound theoretical underpinnings. Participants commented on all the boxes (domains and PPCT rows) making the MPNPA model comprehensive, thorough, and nuanced. In the end I decided that it would be best to leave the MPNPA model unchanged for now pending further exploration of the model’s strengths, weaknesses, and utility with a larger sample. I would like to investigate the model's weaknesses in different practice settings (e.g., school, hospital, outpatient clinic) and among practitioners with different types of challenges and different levels of experience. This may provide me more guidance about how to revise the overall model, how to tailor the model for different groups of clinicians, and how to introduce or teach the model in different professional and training contexts.

If I have the opportunity to present the model to additional clinicians, I hope to add more case examples and illustrations. I would like to provide a more thorough explanation of Bronfenbrenner's PPCT model as background. If I get the opportunity to do further research—for example, a pilot project in which one group of clinicians uses the MPNPA model with actual cases, while another group does "assessment as usual"—I hope to collect more information about ways to improve the model. If the MPNPA model is eventually used as a training and supervision tool, I hope to systematically collect feedback that will help me improve the model.

Limitations

One outcome of doing qualitative research with small sample sizes that are not randomly selected is that study findings cannot be generalized to any other populations. These results are specific to this sample of these particular NP assessment professionals who assess children with NDDs. Further, because interviews were conducted with participants in the San Francisco Bay Area, they are not necessarily representative of other practitioners within their professions. Several participants suggested that the MPNPA model could be applicable to different types of multicultural assessment (e.g., psychodiagnostic and neuropsychological) and to different client populations (e.g., children and adults, individuals with or without NDDs). In the future, I hope to explore the generalizability of the model to other types of assessment and diverse client populations with research that uses a larger, more diverse, sample. One serious limitation of the current research is in the aspect of confirmatory bias. I constructed the MPNPA model based on results from my pilot study. I believed the model I constructed would work, and a new group of participants told me what I expected to hear: that the MPNPA model could be a useful tool. Results could have differed if I had had a different perspective or had used a different theoretical model. Additionally, information gathered through interviews is from the perspective of the assessment professional (rather than the family or child being assessed), as interpreted by one researcher. The MPNPA model explored by this research is intended to be a basis for further discussion and exploration, rather than a conclusive statement about the practices or accuracy of NPA.

Clinical Implications

The MPNPA model could be used by clinicians to help conceptualize individual cases, to facilitate differential diagnosis, or to enhance treatment recommendations. For clinicians with little experience or training in multicultural assessment, the MPNPA model can be used as a self-study, training, or supervision tool to help prepare for multicultural assessment cases. The MPNPA model could be used as a tool to facilitate case discussions by interdisciplinary or multidisciplinary assessment teams. The MPNPA model could be used by assessment teams or departments to retroactively examine multicultural assessment cases as a means to self-evaluate departmental cultural sensitivity and awareness of multicultural cases.

Other Implications

Organizations could use the MPNPA model as a tool to guide discussions about available resources, interpreter competence, and the effectiveness of organizational procedures to handle multicultural assessment cases. Assessment departments and organizations could use the

MPNPA model to examine available assessment tools, evaluate organizational capacity to meet the assessment needs of multicultural cases, and develop a plan to meet unmet assessment needs. For example if, through use of the MPNPA model with actual cases, clinicians within an organization identified interpreter issues that brought into question the validity of assessment results, the organization might establish guidelines to train interpreters and clinicians how to work with each other in an assessment context.

Feedback from use of the MPNPA could lead to the creation of a set of recommendations for an assessment strategy that could be useful to clinicians. For example, if a large number of clinicians used the MPNPA model, and they all concluded that the interaction of clinician language, child language, and available assessment instruments consistently contributed to questions about the validity of assessment results, that observation might inform guidelines about specific assessment instruments. The final model may also be the basis of a training program or book on culturally competent pediatric NPA.

Future Research

After this initial small study, it would be interesting to ask additional pediatric NPA professionals for their input to continue evolving the MPNPA model. Further research might involve conducting a pilot study in which a group of clinicians use the MPNPA model to assess several multicultural cases, while a comparison group performs “assessment as usual,” and comparing the results. Further studies might examine use of the MPNPA model across the lifespan (not just child cases) and with other clinical groups (e.g., non-neurological cases, cases other than developmental disabilities). Some participants even suggested that because the MPNPA model highlights interactions among domains and contextual, environmental factors, the MPNPA model could to lend a more nuanced approach with cases that are not typically considered multicultural. For example, one participant described a case in which a Caucasian, English-speaking child and family were being assessed by an assessment team whose members were also Caucasian and English-speaking. However, the clinical team made assumptions and had prejudgments about the case—and the child's functioning—because of the parent's occupations, education, and socioeconomic status. In this case, the parents' transportation challenges limited their ability to attend appointments and their literacy levels affected their responses on parent rating scales. This case was not considered multicultural, and yet the contextual factors and characteristics influencing the interactions between the family, the assessment team, and the assessment instruments could have been informed through use of the MPNPA model.

Further research on the MPNPA model could lead to recommendations or guidelines that would be more representative of the overall population of NPA professionals or that might generalize to NPA of populations other than children with NDDs. Another study might explore NPA assessment from the perspective of the family. For example, clinicians could ask family members how they felt responding to a self-report behavioral rating scale (versus an interview format) or how they felt interacting with the interpreter or clinical team. . A revised version of the MPNPA model could be a basis for multicultural competency training or further exploration of how to establish multiculturally competent professional practices in NPA. For example, a study utilizing participatory action research might explore the utility of the MPNPA model in examining and improving departmental NP assessment practices within the context of organizational resources and constraints. Organizational resources, such as assessment instruments, NPA staffing, space, work schedules, and interpreter availability may limit flexibility, capacity, or options for NPA.

Another study might use the MPNPA model to analyze a series of NP assessment cases to examine the interaction of multiple factors and develop standards and procedures to improve assessment practices. Such a study might utilize look at archival data and evaluate each case on a number of parameters (e.g., language, immigration and trauma history, parent education, differentials and final diagnosis, number of previous diagnoses, child age, medical complications, verbal or nonverbal status of child, assessment instruments used). Or researchers could ask practitioners to rate the relative importance of the MPNPA domains, rate the frequency with which they observe those domains in their cases, and identify in what ways the domains interact. Then statistical analyses could look at relationships among multiple factors, and use the findings to inform assessment guidelines. For instance, if a study found that utilizing an adaptive or behavioral rating scale parent report with parents of nonverbal children whose families immigrated from Central or South America in which the parents had less than a high school education consistently yielded assessment results that seemed to lack validity, one guideline might be to administer adaptive or rating scales utilizing an interview format. A further study might compare the MPNPA model with other types of multicultural competence training to see if the MPNPA model is more useful for specific training in pediatric NP assessment.

A qualitative study might involve using the MPNPA model to review case records (e.g., medical, educational, social services agency) or perform NP assessments of children with NDDs to estimate appropriateness of diagnoses associated with various cultural factors and to explore relationships between various cultural factors and assessment outcomes. Data gathered might include home languages, ethnicity, immigration history, acculturation, school history/placement, age when first presented for assessment or treatment, developmental and medical history, and current functional status. Interviews and records could provide useful information including what (and how many) diagnoses the child has received, from what types of assessment professionals in what settings, and whether interpreters or translators were used for assessments. It would be interesting to note to what extent parents/guardians were involved in assessment and treatment decisions, how the family felt about the overall assessment process, and how well the child has responded to the prescribed intervention/treatment plan.

Research in these areas could lead to the development of guidelines for multiculturally competent assessment of NDDs. Guidelines might provide recommendations about culturally appropriate assessment tools and practices and suggestions about how multidisciplinary teams can implement assessments in a culturally competent manner to improve diagnostic accuracy and appropriateness of treatment. Guidelines and recommendations could help address multicultural assessment with underserved populations, including English language learners, immigrants, and members of minority cultures.

References

American Academy of Clinical Neuropsychology. (2007). American Academy of Clinical Neuropsychology (AACN) Practice Guidelines for Neuropsychological Assessment and Consultation. *The Clinical Neuropsychologist, 21*(2), 209-231. doi: 10.1080/13825580601025932

American Psychological Association. (2003). Guidelines on multicultural education, training, research, practice, and organizational change for psychologists. *American Psychologist, 58,* 377–402. doi: 10.1037/0003-066X.58.5.377

Americans with Disabilities Act of 1990, 42 U.S.C.A. § 12101 *et seq.* (West 1993)

Anglin, D. M., & Kwate, N. O. A. (2009). Social and cultural factors in the cognitive and clinical assessment of African American adults. In H. A. Neville, B. M. Tynes, and S. O. Utsey (Eds.), *Handbook of African American psychology.* Thousand Oaks, CA: Sage.

Ardila, A. (1995). Directions of research in cross-cultural neuropsychology. *Journal of Clinical and Experimental Neuropsychology, 17,* 143–150. doi: 10.1080/13803399508406589

Arentoft, A., Scheiner, D., & Westerveld, M. (2008). State of multicultural neuropsychological assessment in children: Current research issues. *Neuropsychology Review, 18*(3), 214–222. doi: 10.1007/s11065-008-9065-y

Artiola i Fortuny, L. (2008). Research and practice: Ethical issues with immigrant adults and children. In J. E. Morgan and J. H. Ricker (Eds.), *Textbook of clinical neuropsychology* (pp. 960-981). New York, NY: Taylor and Francis.

Artiola i Fortuny, L., & Mullaney, H. A. (1997). Neuropsychology with Spanish speakers: Language use and proficiency issues for test development. *Journal of Clinical and Experimental Neuropsychology, 19,* 615–622. doi: 10.1080/01688639708403747

Artiola i Fortuny, L., & Mullaney, H. A. (1998). Assessing patients whose language you do not know: Can the absurd be ethical? *The Clinical Neuropsychologist, 12,* 113–126. doi: 10.1076/clin.12.1.113.1727

Bhasin, T., & Schendel, D. (2007). Sociodemographic risk factors for autism in a US metropolitan area. *Journal of Autism and Developmental Disorders, 37,* 667–77. doi: 10.1007/s10803-006-0194-y

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3,* 77-101. doi: 10.1191/1478088706qp063oa

Brickman, A. M., Cabo, R., & Manly, J. (2006). Ethical issues in cross-cultural neuropsychology. *Applied Neuropsychology, 13*(2), 91–100. doi: 10.1207/s15324826an1302_4

Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Cambridge, MA: Harvard University Press.

Bronfenbrenner, U. (1994). Ecological models of human development. In *International encyclopedia of education* (Vol. 3, 2nd ed). Oxford: Elsevier. Reprinted in: M. Gauvain & M. Cole (Eds.), *Readings on the development of children (2nd ed.,* pp. 37-43). NY: Freeman.

Bronfenbrenner, U. (1999). Environments in developmental perspective: Theoretical and operational models. In S. L. Friedman & T. D. Wachs (Eds.), *Measuring environment across the life span: Emerging methods and concepts* (pp. 3-28). American Psychological Association. doi: 10.1037/10317-001

Bronfenbrenner, U. (2005). *Making human beings human: Bioecological perspectives on human development*. Thousand Oaks, CA: Sage.

Bronfenbrenner, U., & Morris, P. A. (2009). The bioecological model of human development. In R. M. Lerner & W. Damon (Eds.), *Handbook of child psychology* (6th ed., pp. 793-828). Hoboken, NJ: Wiley.

Brown v. Board of Education, 347 U.S. 483 (1954).

Byrd, D. A., Miller, S. W., Reilly, J., Weber, S., Wall, T. L., & Heaton, R. K. (2006). Early environmental factors, ethnicity, and adult cognitive test performance. *Clinical Neuropsychology, 20,* 243–60. doi: 10.1080/13854040590947489

Carlson, J. A. (2010). Avoiding traps in member checking. *The Qualitative Report, 15*(5), 1102–1113. Retrieved from http://www.nova.edu/ssss/QR/QR15-5/carlson.pdf

Cohen, R. J., & Swerdlik, M. E. (2010). Historical, cultural, and legal/ethical considerations. *Psychological testing and assessment* (pp. 35–70). New York: McGraw-Hill.

Conant, L. L., Fastenau, P. S., Giordani, B., Boivin, M. J., Chouaramany, C., Xaisida, S.,... Pholsena, P. (2003). Environmental influences on primary memory development: A cross-cultural study memory span in Lao and American children. *Journal of Clinical and Experimental Neuropsychology, 25*(8), 1102–1116. doi: 10.1076/jcen.25.8.1102.16722

Conant, L. L., Fastenau, P. S., Giordani, B., Boivin, M. J., Opel, B., & Dia Nseyila, D. (1999). Modality specificity of memory span tasks among Zairian children: A developmental perspective. *Journal of Clinical and Experimental Neuropsychology, 21*(3), 375–384. doi: 10.1076/jcen.21.3.375.912

Creswell, J. W. (2008). Analyzing and interpreting qualitative data. In *Planning, conducting, and evaluating quantitative and qualitative research* (3rd ed., pp. 243-270). Upper Saddle River, NJ: Pearson.

Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of Advanced Nursing 62*(1), 107–115 doi: 10.1111/j.1365-2648.2007.04569.x

Flanagan, D. P., Ortiz, S. O., & Alfonso, V. C. (2007). Appendix D: Test-Specific Culture-Language Matrices. *Essentials of cross-battery assessment* (2nd ed., pp. 367-378). New York: Wiley.

Gasquoine, P. G. (1999). Variables moderating cultural and ethnic differences in neuropsychological assessment: The case of Hispanic Americans. *The Clinical Neuropsychologist, 13*(3), 376–383. doi: 10.1076/clin.13.3.376.1735

Gurland, B. J., Wilder, D. E., Cross, P., Teresi, J., & Barrett, V. W. (1992). Screening scales for dementia: Toward reconciliation of conflicting cross-cultural findings. *International Journal of Geriatric Psychiatry, 7,* 105-113. doi: 10.1002/gps.930070207

Hays, P. (1996). Culturally responsive assessment with diverse older clients. *Professional Psychology: Research and Practice, 27*(2), 188–193. doi: 10.1037/0735-7028.27.2.188

Hudson, W. (1960). Pictorial depth perception in subcultural groups in Africa. *Journal of Social Psychology, 52,* 183–208. doi: 10.1080/00224545.1960.9922077

Individuals with Disabilities Education Improvement Act, 20 U.S.C. § 1400 (2004)

Kranzler, J. H., Flores, C. G., & Coady, M. (2010). Examination of the cross-battery approach for the cognitive assessment of children and youth from diverse linguistic and cultural backgrounds. *School Psychology Review*, *39*(3), 431–446. Retrieved from http://www.nasponline.org/publications/spr/spr393index.aspx

Lautenschlager, N. T., Dunn, J. C., Bonney, K., Flicker, L., & Almeida, O. P. (2006). Latent semantic analysis: An improved method to measure cognitive performance in subjects of non-English-speaking-background. *Journal of Clinical and Experimental Neuropsychology, 28,* 1381–1387. doi: 10.1080/13803390500409617

Levav, M., Mirsky, A. F., French, L. M., & Bartko, J. J. (1998). Multinational neuropsychological testing: Performance of children and adults. *Journal of Clinical and Experimental Neuropsychology, 20*(5), 658–672. doi: 10.1076/jcen.20.5.658.1126

Llorente, A., Turich, M., & Lawrence, K. (2004). Differences in neuropsychological performance associated with ethnicity in children with HIV-1 infection: preliminary findings. *Applied Neuropsychology, 11,* 47–53. doi: 10.1207/s15324826an1101_6

Malamud Ozer, Y. (2013, April). *Cultural factors in neuropsychological assessment of children with neurodevelopmental disabilities.* Paper presented at CREA (Center for Culturally Responsive Evaluation and Assessment) Inaugural Conference, Chicago, Illinois.

Mandell, D. S., Wiggins, L. D., Amstein Carpenter, L., Danieis, J., DiGuiseppi, C., Durkin, M. S.,... Kirty, R. S. (2009). Racial/ethnic disparities in the identification of children with autism spectrum disorders. *American Journal of Public Health, 99*(3), 493–498. doi: 10.2105/AJPH.2007.131243

Manly, J. J. (2007). Advantages and Disadvantages of Separate Norms for African Americans. *The Clinical Neuropsychologist, 19*(2), 270-275. doi: 10.1080/13854040590945346

Manly, J. J., Byrd, D. A., Touradji, P., & Stern, Y. (2004). Acculturation, reading level, and neuropsychological test performance among African American elders. *Applied Neuropsychology, 11,* 37–46. doi: 10.1207/s15324826an1101_5

Manly, J. J., Jacobs, D. M., Touradji, P. S., Small, S. A., & Stern, Y. (2002). Reading level attenuates differences in neuropsychological test performance between African American and White elders. *Journal of the International Neuropsychological Society, 8,* 341–348. doi: 10.1017/S1355617702813157

Manly, J. J., Miller, S. W., Heaton, R. K., Byrd, D., Reilly, J., Velasquez, R. J., … Grant, I. (1998). The effect of African-American acculturation on neuropsychological test performance in normal and HIV-positive individuals. *Journal of the International Neuropsychological Society, 4,* 291-302.

Marlowe, W. B. (2000). Multicultural perspectives on the neuropsychological assessment of children and adolescents. In E. Fletcher-Janzen, T. L. Strickland, & C. R. Reynolds (Eds.), *Handbook of cross-cultural neuropsychology* (pp. 145–166). New York: Springer.

Mason, M. (2010). Sample size and saturation in PhD studies using qualitative interviews. Foru*m Qualitative Sozialforschung / Forum: Qualitative Social Research, 11*(3), Art. 8. http://www.qualitative-research.net/index.php/fqs/article/view/1428/3027

Mezzacappa, E. (2004). Alerting, orienting, and executive attention: Developmental properties and sociodemographic correlates in an epidemiological sample of young, urban children. *Child Development, 75*(5), 1373–1386. doi: 10.1111/j.1467-8624.2004.00746.x

Mindt, M., Byrd, D., Saez, P., & Manly, J. (2010). Increasing culturally competent neuropsychological services for ethnic minority populations: A call to action. *The Clinical Neuropsychologist*, *24*(3), 429-453. doi: 10.1080/13854040903058960

Nell, V. (2000). *Cross-cultural neuropsychological assessment: Theory and practice.* Mahwah, NJ: Lawrence Erlbaum Associates.

Nell, V., Myers, J., Colvin, M., & Rees, D. (1993). Neuropsychological assessment of organic solvent effects in South Africa: Test selection, adaptation, scoring, and validation issues. *Environmental Research, 63*(2), 301–318.

Ostrosky-Solis, F., Canseco, E., Quintanar, L., Navarro, E., Menses, S., & Ardila, A. (1985). Sociocultural effects in neuropsychological assessment. *International Journal of Neuroscience, 27,* 53–66. doi: 10.3109/00207458509149134

Ostrosky-Solis, F., Ramirez, M., Lozano, A., Picasso, H., & Velez, A. (2004). Culture or education? Neuropsychological test performance of a Maya indigenous population. *International Journal of Psychology, 39,* 36–46. doi: 10.1080/00207590344000277

Osuji, O. N. (1982). Constructing complex geometric patterns: A study of age and ability among Igbo children in Eastern Nigeria. *Journal of Cross-Cultural Psychology, 13,* 481–499. doi: 10.1177/0022002182013004007

Ponterotto, J. (2010). Qualitative research in multicultural psychology: Philosophical underpinnings, popular approaches, and ethical considerations. *Cultural Diversity & Ethnic Minority Psychology*, *16*(4), 581-589. doi: 10.1037/a0012051

Qi, C. H., Kaiser, A. P., Milan, S., & Hancock, T. (2006). Language performance of low-income African-American and European American preschool children on the PPVT-III. *Language, Speech, and Hearing Services in Schools, 37*(1), 5–16. doi: 10.1177/0271121411415426

Restrepo, M. A., Schwanenflugel, P. J., Blake, J., Neuharth-Pritchett, S., Cramer, S. E., & Ruston, H. P. (2006). Performance on the PPVT-III and the EVT: applicability of the measures with African-American and European-American preschool children. *Language, Speech, and Hearing Services in Schools, 37*(1), 17–27. doi: 10.1044/0161-1461(2006/003)

Reynolds, C. B. (2000). Methods for detecting and evaluating cultural bias in neuropsychological tests. In C. R. Reynolds, E. Fletcher-Janzen, & T. L. Strickland (Eds.), *Handbook of cross-cultural neuropsychology* (pp. 249–286). New York: Springer.

Rhodes, R. L., Kayser, H., & Hess, R. (2000). Neuropsychological differential diagnosis of Spanish-speaking preschool children. In C. R. Reynolds, E. Fletcher-Janzen, & T. L. Strickland (Eds.), *Handbook of cross-cultural neuropsychology* (pp. 317–334). New York: Springer.

Rhodes, R. L., Ochoa, S. H., & Ortiz, S. O. (2005a). Acculturational factors in psychoeducational assessment. In *Assessing culturally and linguistically diverse students* (pp. 124–136). New York: Guilford.

Rhodes, R. L., Ochoa, S. H., & Ortiz, S. O. (2005b). Legal and ethical requirements for the assessment of culturally and linguistically diverse students. In *Assessing culturally and linguistically diverse students* (pp. 42–56). New York: Guilford.

Rhodes, R. L., Ochoa, S. H., & Ortiz, S. O. (2005c). The use of interpreters in the assessment process and school-based practice. In *Assessing culturally and linguistically diverse students* (pp. 91–102). New York: Guilford.

Rohit, M., Levine, A., Hinkin, C., Abramyan, S., Saxton, E., Valdes-Sueiras, M., & Singer, E. (2007). Education correction using years in school or reading grade-level equivalent? Comparing the accuracy of two methods in diagnosing HIV-associated neurocognitive impairment. *Journal of the International Neuropsychological Society, 13,* 462–470. doi: 10.1017/S1355617707070506

Rosselli, M., & Ardila, A. (2003). The impact of culture and education on non-verbal neuropsychological measurements: A critical review. *Brain and Cognition, 52*(3), 326–333. doi: 10.1016/S0278-2626(03)00170-2

Slone, M., Durrheim, K., Kaminer, D., & Lachman, P. (1999). Issues in the identification of comorbidity of mental retardation and psychopathology in a multicultural context. *Social Psychiatry and Psychiatric Epidemiology, 34*(4), 190–194.

Slone, M., Durrheim, K., Lachman, P., & Kaminer, D. (1997). Association between the diagnosis of mental retardation and socioeconomic factors. *American Journal of Mental Retardation, 102*, 535–46. doi: 10.1352/0895-8017(1998)102<0535:ABTDOM>2.0.CO;2

Snowden, L. R. (2012). Health and mental health policies' role in better understanding and closing African American–White American disparities in treatment access and quality of care. *American Psychologist, 67*(7), 524-531. doi: 10.1037/a0030054

Tudge, J. R. H., Mokrova, I., Hatfield, B. E., & Karnik, R. B. (2009). Uses and misuses of Bronfenbrenner's bioecological theory of human development. *Journal of Family Theory & Review, 1*(4), 198–210. doi: 10.1111/j.1756-2589.2009.00026.x

Weinstein, C., Fucetola, R., & Mollica, R. (2001). Neuropsychological issues in the assessment of refugees and victims of mass violence. *Neuropsychology Review, 11*(3), 131–141. doi: 10.1023/A:1016650623996

APPENDIX A

MPNPA Example within the PPCT Model

System	*PPCT Description / Examples*	*MPNPA example*
Process		
Proximal Processes	• Enduring forms of interaction that take place on a regular basis or over extended periods of time • *Examples:* Child–parent interactions, child–child activities, play (group or individual), learning new skills, and performing complex tasks	• A child with an NDD including speech delays and behavior problems may have limited opportunities for age-expected social interactions with peers and greater requirements for adult supervision, and limited experiences with creative play. Over time, this child may develop less autonomy, fewer skills, and fewer learning gains than same-age peers without an NDD • Limited verbal abilities and behavioral competencies would likely influence cognitive abilities and academic achievement, as evaluated on NPA
Person		
Demand characteristics	• Act as an immediate stimulus to other people, may influence initial interactions because of expectations • *Examples:* age, gender, race, physical appearance, language, acculturation	• Factors such as age, gender, ethnicity, child's physical appearance may influence how others (parents, peers, healthcare professionals) interact with child • Parent ethnicity and language ability may influence how family and child are treated by NPA professionals • Parents and others in community may have different expectations based on child's age and gender
Resource characteristics	• Social and material resources, mental and emotional characteristics, and biopsychological assets or liabilities that influence an organism's ability to effectively engage in proximal processes • *Liabilities (examples):* Genetic defects, low birthweight, chronic or severe illness, acquired or traumatic brain injury • *Assets (examples):* ability, skills, knowledge, experiences, educational opportunities, caring parents, food and housing	• SES, health insurance, and access to public transportation may limit access to/choice of health care services including NPA professionals • Inability to access services at a Regional Center may be an obstacle to a child becoming eligible to receive early intervention services through the public schools • Parent education may influence how parents participate in NPA and respond to rating scales, give developmental/health history, etc. • Child with an NDD may have prenatal or birth stressors, TBI, severe or chronic illness

System	*PPCT Description / Examples*	*MPNPA example*
Force characteristics	• Behavioral dispositions that can activate and sustain or retard the occurrence of proximal processes • *Developmentally disruptive dispositions (examples):* impulsiveness, explosiveness, distractibility, inability to defer gratification, difficulty with emotional regulation, aggressive tendencies, apathy, inattentiveness, shyness, insecurity, and avoidance tendencies • *Developmentally generative dispositions (examples):* curiosity, tendencies to engage in activities or with other people, responsiveness to others, ability to delay gratification	• Child with an NDD may have difficult temperament, behavioral problems, aggression, impulsivity, social avoidance • These force characteristics may impede development of behavioral competencies, positive peer relationships, and limit opportunities for cognitive, emotional, and social development
Context		
Microsystem	• Any environment in which the developing individual spends considerable time engaging in activities and interactions, • *Examples:* Home, school, with peers	• Child–family: Child may be viewed as burdensome or a shame on the family (within context of family values/ cultural attitudes) • Child–school: Child may have access to supportive services or placement in special education classes at school • Child–peers: Child may be treated differently or ostracized by school peers
Mesosystem	• Interactions among microsystems • *Examples:* parents–teacher; family–neighborhood	• Parents may have difficulty communicating child's needs with teacher (or vice versa), which could limit child's access to needed support services or special education, which may influence child's learning problems • Family may be isolated or ostracized within neighborhood due to child's NDD contributing to limited social support, stigmatization
Exosystem	• Relationships between systems, including one indirect • *Example:* Relationship between parent's work and home environment indirectly effects child's development through childcare, income, or time parent can spend with child	• Parent required to work night shift limiting time spent with child, putting strain on financial resources due to need for child care • Parent work schedule may limit times parent is available to participate in child's NPA

System	*PPCT Description / Examples*	*MPNPA example*
Macrosystem	• Overarching pattern of subsystems (micro, meso, exo) that characterize culture/ subculture within which child and family function • *Examples:* belief systems, lifestyles, customs, tangible resources, opportunities, laws, ethnic groups, religious affiliations, social classes, overarching cultural or social contexts	• Prevailing attitudes and influences of the dominant culture, influences and attitudes of the family's acculturation, language and educational status • Expectations, beliefs, stigma, and willingness to participate in NPA or follow through on treatment recommendations may differ based on the child's gender • Legislation (e.g., Individuals with Disabilities Education Improvement Act of 2004, Americans with Disabilities Act of 1990) provide safeguards & rights to families of children with disabilities & students with NDDs
Time		
Micro-time	• What is occurring during the course of a specific activity or interaction	• How the child presents during the NPA
Meso-time	• The extent to which activities and interactions occur with consistency in the developing person's environment	• Child A: identified with NDD began receiving regular early intervention services at age 2 years • Child B: identified with NDD at age 4.5 years, child received sporadic early intervention services, child lack of verbal ability and behavioral problems limited access to school-based services
Macro-time (chronosystem)	• Encompasses change or stability over time • *Internal to child (examples*): Age-expected cognitive development, physiological changes, puberty • *External to child (examples*): parent's or sibling's death, change in family structure, historical events	• Child's individual development (physiological, emotional, cognitive) over time • Points in a child's life at which the child or family experienced stressors such as immigration stress, wartime trauma, domestic violence, or change in family structure

APPENDIX B

MPNPA Questionnaire

MPNPA Questions

1. Think about how the MPNPA model might be applied in a multicultural pediatric neuropsychological assessment (NPA) case. What would be the ***strengths*** of using the MPNPA model?

2. What would be the ***weaknesses*** of using the MPNPA model?

3. In what ways could the MPNPA model be ***useful*** for **case conceptualization** of multicultural NPA cases of children with neurodevelopmental disabilities (NDDs) such as autistic spectrum disorders, PDDs, or intellectual disabilities?

4. In what ways could the MPNPA model be ***detrimental*** for case conceptualization of multicultural pediatric NPA cases of children with **NDDs?**

5. In what ways could the MPNPA model be used for **treatment planning** in multicultural pediatric NPA cases?

6. Please share any ***additional comments*** about the MPNPA model or this topic.

Demographic Questions

Responses to these demographic questions may help us better understand some of the content gathered during this study. This information will not be reported in a way that compromises individuals' confidentiality. We understand that you may choose to not respond to one or more of these questions.

7. Gender

8. Age

9. Languages spoken *(indicate conversational fluency and literacy):*

10. How do you identify your culture or ethnicity, including multicultural identity?

Information about your neuropsychological assessment education, experience, and practice:

11. How long have you been performing neuropsychological assessment?

12. What are your primary practice settings *(e.g., hospital, private practice, school)?*

13. With what age groups do you typically *work (e.g., 0–5, K–12, older adults)?*

14. What types of neuropsychological assessments do you typically perform (e.g., ADHD, learning disabilities, developmental disabilities, dementia, TBI, etc.)?

15. Highest level of education *(degrees, certificates, credentials):*